American FORESTS

APRIL 1935

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AMERICAN FORESTS

OVID BUTLER, Editor
L. M. CROMELIN and ERLE KAUFFMAN, Assistant Editors

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Member A. B. C.
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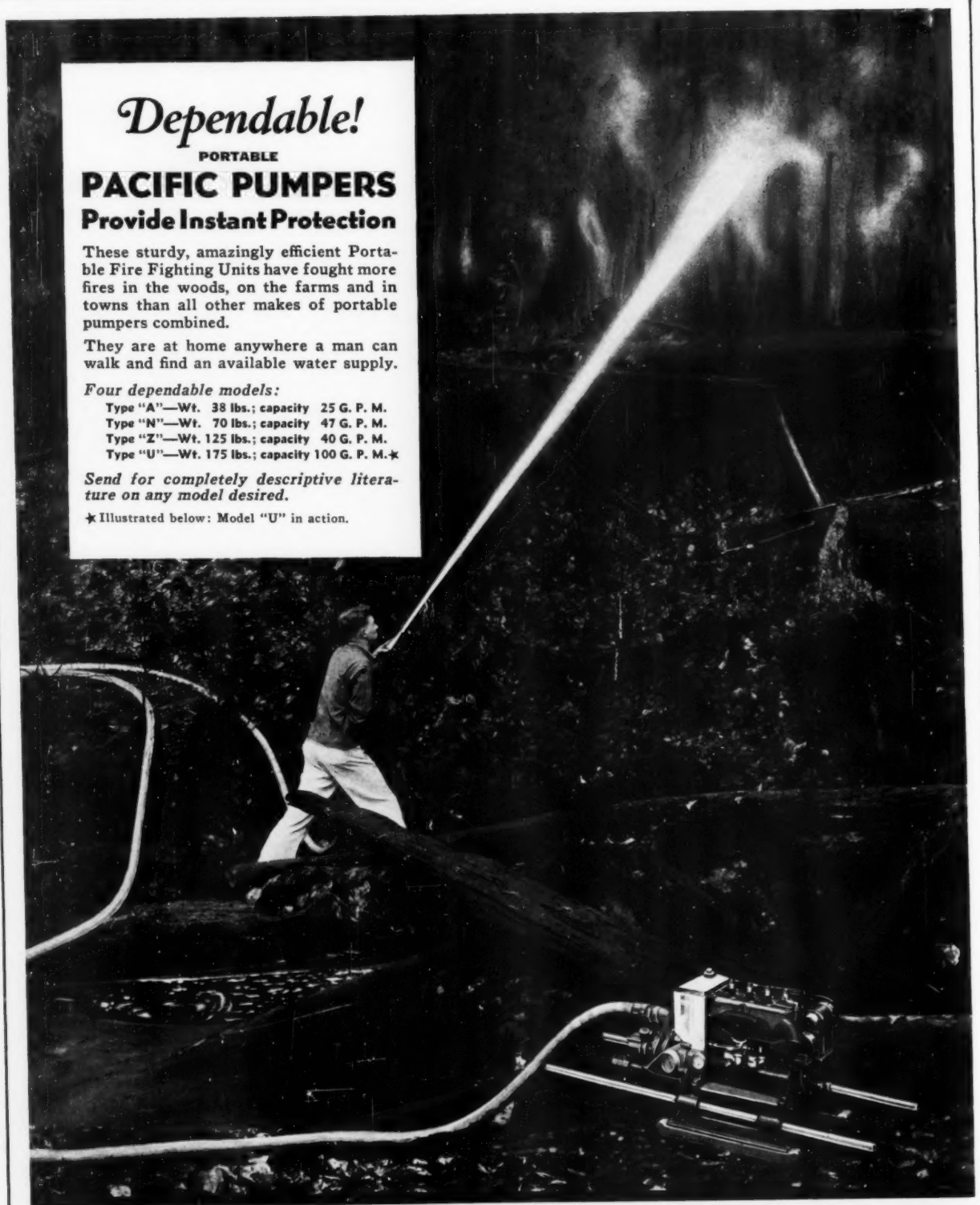
Spring, with that nameless pathos in the air
Which dwells with all things fair,--
Spring, with her golden suns and silver rain,
Is with us once again.



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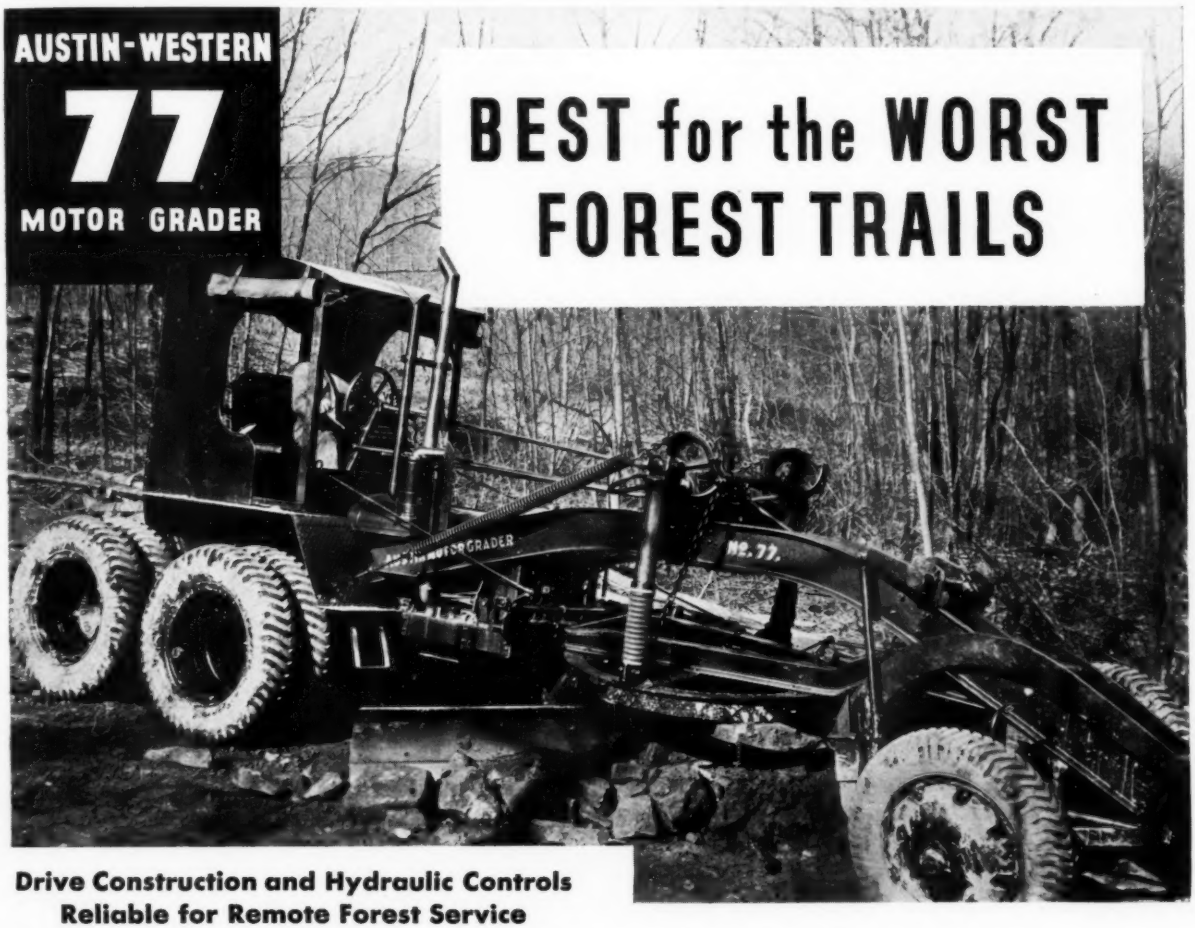

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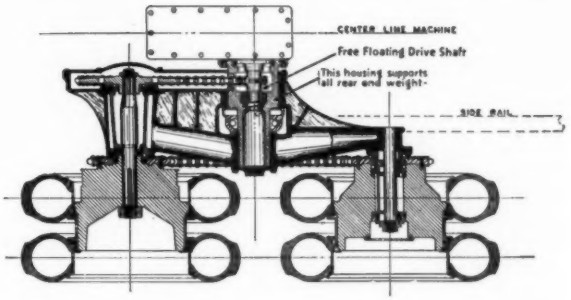

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Photograph by Loyd Cooper, made in the Colorado Desert of California.

"Wild Palms"

***And they are tired now,*
Their winds have all come home.

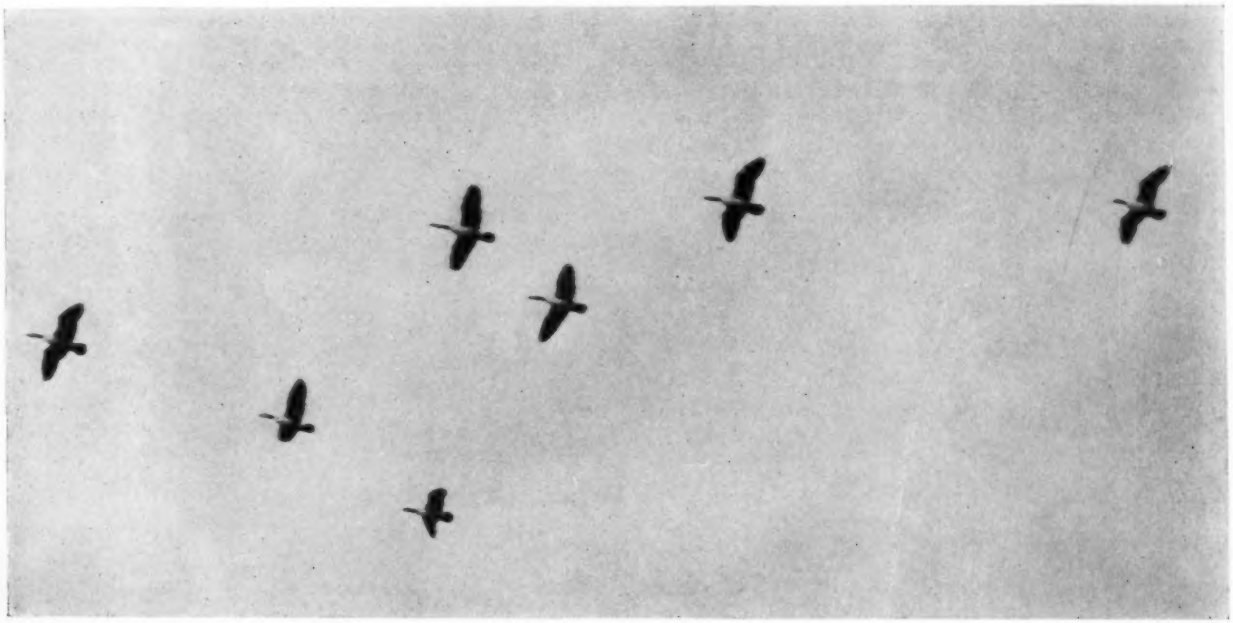
—JOHN PHELPS

Winner of First Prize—1934 National Competition Conducted by
The American Forestry Association
for
Beautiful Photographs of Trees in America

A full account of the 1934 awards will be found on page 182

AMERICAN FORESTS

Vol. 41 APRIL, 1935 No. 4



ANCESTRAL HIGHWAYS OF THE SKY

The great spring flight of wild fowl is under way along aerial routes established by the winged hosts thousands of years ago

By FREDERICK C. LINCOLN

THE long cold winter had passed away and had been succeeded by the usual alternations of sloppy thaws and piercing eastern gales, which characterize mid-March on the New England coast. In a small room, obviously the master's study, with a large window overlooking the bay, two wildfowlers were engaged in that last seasonal rite, the ordering of guns and other equipment to be laid away until the autumn return of the waterfowl. Suddenly one of them stiffened to attention, and ceased the affectionate polishing of a walnut gun stock.

"Listen, there they go!" he exclaimed, as the clarion call of Canada geese in flight was borne in by the wind. Soon, across the salt meadows, the well ordered V-shaped flocks came into view, passed beyond the cape, and on into the north, their calls floating back for some minutes after the travelers themselves had passed from sight.

"Bound for their breeding grounds in Labrador or Newfoundland," continued the speaker, reminiscently. "You know, Jim, I used to think that some of the flocks of Canadas we see going past in the spring came from winter quarters in the Chesapeake Bay country, but it seems that one of those scientists down in Washington has proved that the geese we see here don't go that far south."

This hunter's first belief that the Canada geese of the South Atlantic area followed the coast line north and south from New England has been widely accepted as a fact, but in recent years data obtained by marking the birds with numbered bands have proved it erroneous. The hunter was right in changing his belief. While the geese wintering in New England and in Maryland, Virginia, and the Carolinas, are the same species, the banding records have shown that they represent distinct "flights" with geographically different breeding grounds. The New England birds are entirely maritime and have their nesting grounds chiefly in the maritime Provinces of Canada, the Labrador Peninsula and Newfoundland. In winter they rarely travel south of Long Island Sound. The southern flight has its breeding grounds in the interior, principally around the eastern shores of Hudson Bay. In the spring these latter birds start their northward flight from the general vicinity of Chesapeake and Delaware Bays, and make a cross-country non-stop flight over West Viriginia and Pennsylvania to the western

end of Lake Erie. Here they are joined by some of the flocks that have wintered in the lower Mississippi Valley and have reached the Lake Erie rendezvous by a cross-country flight northeastward across Illinois and Indiana. The augmented flocks continue this northeasterly flight through the peninsula of southern Ontario and are gradually dissipated as the nesting grounds are reached.

These two flights of Canada geese have their counterparts in flights of black ducks; in other words, the South Atlantic area provides winter quarters for comparatively few black ducks that nest in the northeastern maritime regions. It is true that more black ducks than Canada geese follow the coastal trail from Maine and New Brunswick

Bureau of Biological Survey

A "blizzard" of snow geese about to take the sky trail. Twice each year—in the spring and in the fall—the main migration arteries are thronged, not only with ducks and geese, but also with a great assemblage of shorebirds, blackbirds, orioles, thrushes, warblers, swallows, sparrows, and others.

south to the Carolinas, or even to Georgia and Florida, but even so, the majority of the black ducks that find winter quarters on the South Atlantic coast are interior bred and pursue the route to the coast outlined for the Canada goose.

Because of the devastating effects of unwise drainage coupled with legitimate agricultural activities and drought, the great waterfowl breeding grounds of the United States have been largely destroyed. In the interior of the country, however, at the north end of Great Salt Lake, the vast marshes of the Bear River remain an important breeding ground for large numbers of ducks and other aquatic birds. A large part of these marshes is now embraced within a Federal refuge, and it is interesting to trace the trails followed by the ducks in the autumn as they proceed to their winter quarters.

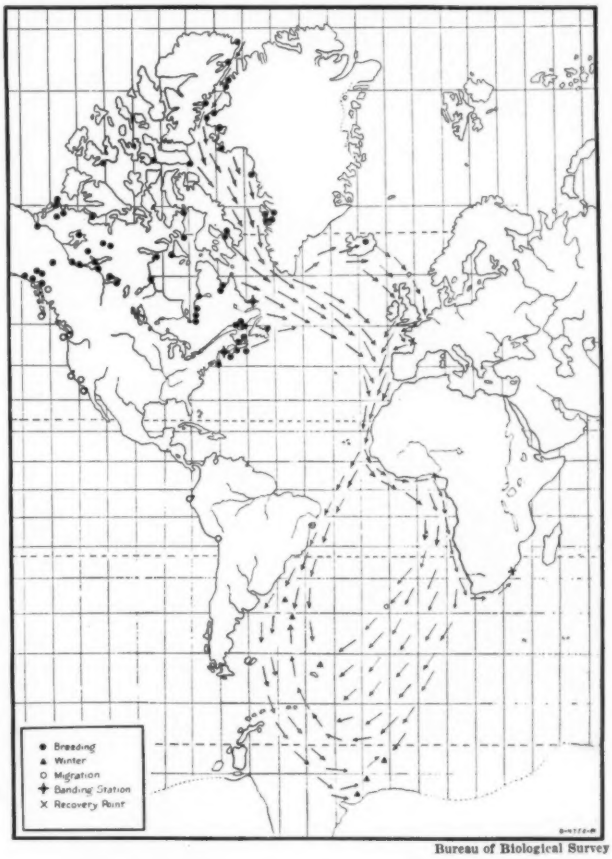
From the evidence furnished by the numbered bands, five different routes have been mapped. As would be expected, many of the birds are unable to resist the lure of the valleys of California and in order to reach them, two different lanes of travel are used. Those ducks that are in a hurry to test the claims of the Los Angeles Chamber of Commerce, find that a route directly westward across Nevada to the confluence of the Sacramento and San Joaquin rivers, offers the quickest access to the land of perpetual sunshine. Others with the same destination in mind but desiring to make a more leisurely trip, start their southward journey by going northwest across the southern parts of Idaho and Oregon and, after a side trip to the Klamath Lake Wildlife Refuge, join and turn south with other winged travelers in the south-central part of the latter State. A third group elects to spend the winter in the interior of Old Mexico and their itinerary takes them into northwestern Colorado, across the Uncompahgre Plateau, through the San Luis Valley, and on across New Mexico by way of the Rio Grande Valley. Another line of travel from these marshes that is utilized by a large body of birds, lies eastward through the low passes of southern Wyoming to the Laramie plains, where it turns south across eastern Colorado, and by way of the Panhandle of Texas ends at a waterfowl Riviera on the Gulf coast.

Birds of a fifth group, however, pursue what is one of the most remarkable of all North American waterfowl migration routes. These birds actually start their fall journey by first flying northeast across southeastern Idaho and northwestern Wyoming. Then turning eastward across

Montana, the Dakotas, Minnesota, Wisconsin, and Michigan, they join forces with other ducks of their own species en route out of the Prairie Provinces of Canada, and continue on to the Finger Lakes region of Western New York, or to the coasts of Maryland and Virginia. It is interesting to observe that in crossing from west to east through the Dakotas, Minnesota, and Wisconsin, many of these birds, chiefly redheads, are actually following a course that is at right angles to routes followed by other ducks of their own kind that are en route from the Canadian breeding grounds to the southern states.

The Pacific coast is not followed throughout its entire length by many of the important species of game waterfowl, most of which reach their breeding grounds by trails into the interior. There is one species, however, the diminutive cackling goose, which does have a migration route chiefly maritime. Their main winter quarters are at the Tule Lake Wildlife Refuge on the Oregon-California line and in the Sacramento Valley of California, with a few in the northern part of the San Joaquin Valley. In starting their spring journey, they make their way northward to the Columbia River, where their trail turns west to the coast. Turning again to the north, they pass the Queen Charlotte Islands and continue their oceanic travels along the coast of British Columbia, across the Gulf of Alaska and the Alaska Peninsula, finally reaching their summer homes in the region of the delta of the Yukon River.

The longest migration route of the Western Hemisphere starts in Alaska, Yukon, and Mackenzie and has its southern terminus in Patagonia. It is used over its entire length by some land birds, and waterfowl species use it between the northern regions and the Gulf of Mexico. With its many branch trails it forms a complicated system and during the migratory season, literally teems with bird life intent upon



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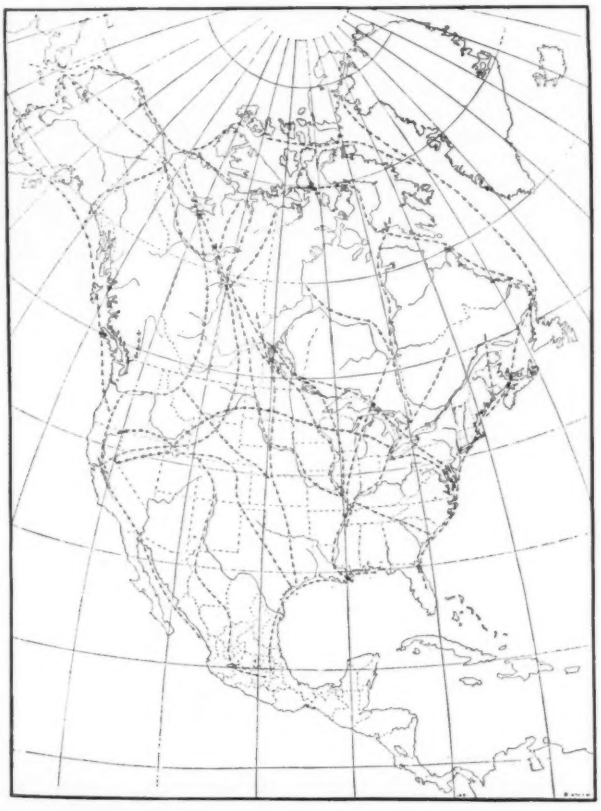


These fascinating charts show, at left, the ancestral highways of North American waterfowl, and, above, the distribution and migration of the Arctic terns of North America, the champion globe trotter among all birds.

reaching the breeding grounds as soon as climatic conditions render them favorable for nesting, or scurrying away from those regions before the advance of winter.

In North America the direction of this broad flyway is southeast through the valley of the Mackenzie River and the great lake system of the Prairie Provinces of Canada and on south to the Gulf of Mexico via the Missouri and Mississippi rivers. Somewhere near the international boundary a branch route leads off to the southwestward across northwestern Montana and the Panhandle of Idaho, follows along the Snake and Columbia Rivers, and turns southward across central Oregon to the interior valleys of California. This branch is used by the pintails or "sprigs" and the widgeons, which are of great importance to the sportmen of California.

A large contingent of Canada geese and black ducks from breeding grounds in western Quebec and Ontario and from Michigan, come in from the northeast and join the main stream of traffic near the mouth of the Ohio River, while near this same point another branch leads off across the mountains of Tennessee and Kentucky to the coast of South Carolina. This latter trail is used by some individuals of that earliest of all fall waterfowl migrants, the dainty little blue-winged teal, and by several species of non-game birds.

It should not be supposed that the use of these migration routes or trails is restricted to (*Continuing on page* 196)

Forestry--A Public and Private Responsibility

By F. A. SILCOX

Chief, United States Forest Service

MR. F. A. SILCOX

Chief, United States Forest Service

FOR many decades a virile, resourceful lumber industry has operated in, and profited from, a resource which nature provided. In the process, towns and communities were established. The industry was founded and financed on a basis of quick liquidation. On that basis, and with what seemed like inexhaustible supplies in sight, forest lands were exploited, forest industries moved from one forest region to the next. Then the inevitable happened—towns were left stranded and forlorn, local agriculture and labor were bereft of local markets, community indebtedness was defaulted, the social and economic structure was devastated.

Events of the last few years have clearly shown the need for some readjustment in our industrial and economic structure. The nature of these readjustments will require careful and unprejudiced thinking by all of us. It is but natural that at a time like this there should be many divergent opinions. In a democracy like ours these opinions may be reconciled through free and frank discussion by those whose interests may be affected. Both the lumber industry and the public are vitally concerned in finding a realistic solution of the forest problems which confront them.

Public opinion recognizes that old methods and results are unnecessarily wasteful. It is conscious of the fact that forests are not deposits of ore; they are, rather, products of the soil susceptible, like other crops, of renewal and management in accordance with well known sciences and practices; and that they can be managed so that they will contribute support to a fair share of our nation's population with some degree of security and stability.

In frankness I must say, however, that as far as I can see after traveling widely over this country, a large portion of the lumber industry is still operating on the basis of quick liquidation, draining off the few remaining reservoirs of virgin timber, with the usual inevitable result. There are notable exceptions to this general statement, but, unfortunately, the exceptions are all too few. I am convinced that the progressive leaders of the industry realize fully this situation, and sincerely want to see their industry change from a suicidal to a sustained yield basis. It is in the interest of the industry from every standpoint that this be done at the earliest possible time. It means, not only now, but in the long run, greater security to the investments made, a more stable market for the manufactured product, a wider tax base at lower rates, a greater degree of security and stability to communities, and, not least to be considered, a restoration of public confidence which will insure, as nothing else can, a sympathetic understanding and consideration of the difficult problems which have beset the industry and are, in a major degree still besetting the industry. I want here, not merely to state the general situation as I see it from a public point of view,—I want sincerely, with your cooperative help, to find out why a course of action, recognized by both public and private interests as desirable, is not being made effective more rapidly, and what is necessary to be done to bring the change about.

At the outset, let me say that in my opinion there is no social advantage in substituting public management of industry if private initiative can and will accomplish the same social objectives at no greater cost to the public. It is only when private initiative fails to meet the needs of the people that the Government must step in to protect the public interests. The entire forest program of the Federal Government is based upon this principle. * * *

Lumber Code Only Way Out

The Lumber Code, approved August 19, 1933, has naturally very much in common with the whole series of codes designed to secure fair competition, and approved for all of the major industries. Dealing, as it did, however, with one of the major basic resources of the country, there was included in the Code a provision unique in its requirements—*viz.*, one on conservation. It is primarily in connection with this provision of the Code that the Forest Service has the most direct responsibility. Under Article X of the Code, acting for the Secretary of Agriculture, the Forest Service has cooperated with the industry to draft a program of public and private action necessary to make effective the conservation provisions of the Code. After a series of conferences, the industry made a number of definite commitments, including its approval of minimum woods practice rules, its agreement to observe and enforce them, its recognition, through a reward in the form of allocations of additional production, of the necessity for the practice of sustained yield, if the intent of its commitments under Article X is to be fulfilled.

The record is clear that the industry made these commitments on Article X contingent on public assistance to help carry them out and, no doubt, with an understanding that provisions of the Code, other than Article X, would be enforcible as a part of the general program. In fairness, there can be no question about this. Now, after a little over eighteen months of Code operation, there is a sense of confusion and frustration growing out of the delays in securing compliance with the basic code requirements on prices, volume allocation, and on hours and wage standards. Changes in the original price provisions have been made, growing out of conflicts of opinion within the industry, and in a change of policy regarding such measures on the part of the public. The volume allocation provisions are having a difficult time, because of the low volume of business which has been available to carry the overhead and operating costs on existing mill capacity. Wage and hour provisions are being disregarded by many small operators who, finding

no real enforcement, proceed to go their own way irrespective of the Code provisions. In combination with these difficulties, and directly a cause, is the confusion existing concerning the present and future legal status of the NRA. * * *

Notwithstanding all of the perplexities, the difficulties of enforcement, the legal confusion, and the uncertainties of the future, I am not pessimistic about the result. The procedure set up under the Code is one which offers the opportunity to sit around the table to discuss, and deal with, in a flexible, democratic manner, the problem of industry. I, for one, would regret to see frozen into legislation provisions which should be left flexible within a broad, liberally legal structure. For the first time in the history of the world a whole nation has made an effort to settle its major industrial problems within the limits of a democratic structure. Whatever the future holds, I have faith that we are going to preserve, if we are wise, that method of dealing with our national problems. The procedure set up under the Codes, therefore, it seems to me, offers the only opportunity to combine to work out our problems in a manner which insures the representation of all interests vitally concerned. I have been unable to find any alternative which holds promise to safeguard our democratic institutions, and at the same time come to grips with the real problems which confront us, and make progress in their solution.

Pending the time that legal decisions are made, and the future becomes more clear, action can be taken by the public agencies, the industry, and both in combination to do certain clearly defined things. Out of the joint conferences there was evolved a program of action. On the one side the industry definitely commits itself to stop the process of cut out and get out, and go on a sustained yield basis, in return for which the public will give aid by building up and maintaining, cooperatively, an adequate fire protective system; aid in protection from insects and disease; relief from present inequitable systems of taxation; extension of credits; promotion of research work, and the acquisition of large areas in public ownership, both of cut over lands and reserve supplies of timber.

Upon what course is the Federal Government launched in its New Deal policies of forest conservation?

This question in recent months has aroused wide interest. In many quarters, uncertainty as to the ultimate purpose behind some of the Government's action has raised the specter of Government ownership and management of all forest properties.

In the statement here printed, Mr. Silcox, in his capacity of Chief Forester, clarifies Forest Service policies and deals openly and frankly with such basic questions as public versus private management of forests, the maintenance of the Conservation Article of the Lumber Code, Federal purchases of timber lands and competition of the Government in logging and milling.

The statement is from an address delivered by Mr. Silcox at New Orleans on March 13 before the Control Committee of the Lumber Code Authority and representatives of the Southern Pine Association and the Hardwood Manufacturers Association.--Editor.

Industry Must Go Further

Both the lumber industry and the public agencies have been moving towards the carrying out of this plan of action. You have set up your organization with foresters on the job to check up, to educate, and to explore fully the possibilities of making effective improved forest practices. I am sure you will continue those efforts. The public, on the other hand, has, notwithstanding the fact that no major legislation has been introduced or passed concerning the items of the public program, taken definite steps to carry out its part of the program.

Already nearly $2,000,000 of Federal money is expended with the States in cooperation with private owners. This has been tremendously supplemented by the work of the C.C.C. camps, which last year did fire protective work on privately owned lands which, if paid for by their owners, would have, it is estimated, cost over $75,000,000; the emergency funds have made possible the purchase of very nearly 8,000,000 acres of National Forest land; the R. F. C. has extended credits to some one hundred and thirty-four lumber concerns; the President has sent a letter to all of the Governors of the various States urging each one of them to call together representatives of Federal, State and private industry to consider the tax delinquency of timberlands, and other forestry questions.

The public has already taken extensive action to assist the industry, but the industry, with few exceptions, has not taken seriously a readjustment of itself to get on a sustained yield basis, but has been inclined to take the position that the public should be satisfied with bare minimum woods practice requirements. The leaving of areas productive is essential and desirable, but it does not get at the heart of the problem, which is to manage these timber properties, including the remaining stands of virgin timber, so that there will not be a gap in production, with resulting community collapse, during the period that the young stands are reaching merchantable size.

Government Acquisition Policy

In carrying out the public's part of the program there is one particular question in which I know you are all interested: What is the policy of the Federal Government in the purchase of timberlands? This question arises out of the fact that within recent years the Government has entered upon an expanded forest acquisition program. This policy has been the gradual outgrowth of a real need for the Government to take part in safeguarding the remaining forests of the public domain, and reclaiming cut-over lands which private initiative could not, or would not, restore to productivity. This policy is of long standing. * * * * *

It is for the purpose of building up permanent communities or preventing communities from becoming stranded after cutting out the timber that the Government has recently modified its forest acquisition policy. In the past, as you know, we were concerned mainly with assuring timber supplies to meet future needs. We bought chiefly cut-over land or timberland of low present value. Such land will afford opportunity for large-scale employment only in the more or less distant future. At the same time, the accessible timberlands were gradually being cut out, and the communities dependent on them were finding themselves without means of livelihood. For this reason the Government has recently undertaken to acquire some of the mature timber in sections of the country threatened with early timber exhaustion, which jeopardizes the existence of local communities. The idea is that the Government, (*Continuing on page* 193)

PREHISTORIC TREE-TRAVELS

The Terrestrial Script Rolls Back to Tell the Fascinating Story of the Antiquity of Our Contemporary Trees, and to reveal the Gingko, the Aristocrat of Trees, little Changed in 120,000,000 Years, the Sycamore, Poplar and Willow Trailing the Great Saurians; the Oak Believed to be the First Tree, the Beech the Oldest Existing Tree Name, and Giant Sequoias, Once Spreading Their Branches Over Every Land.

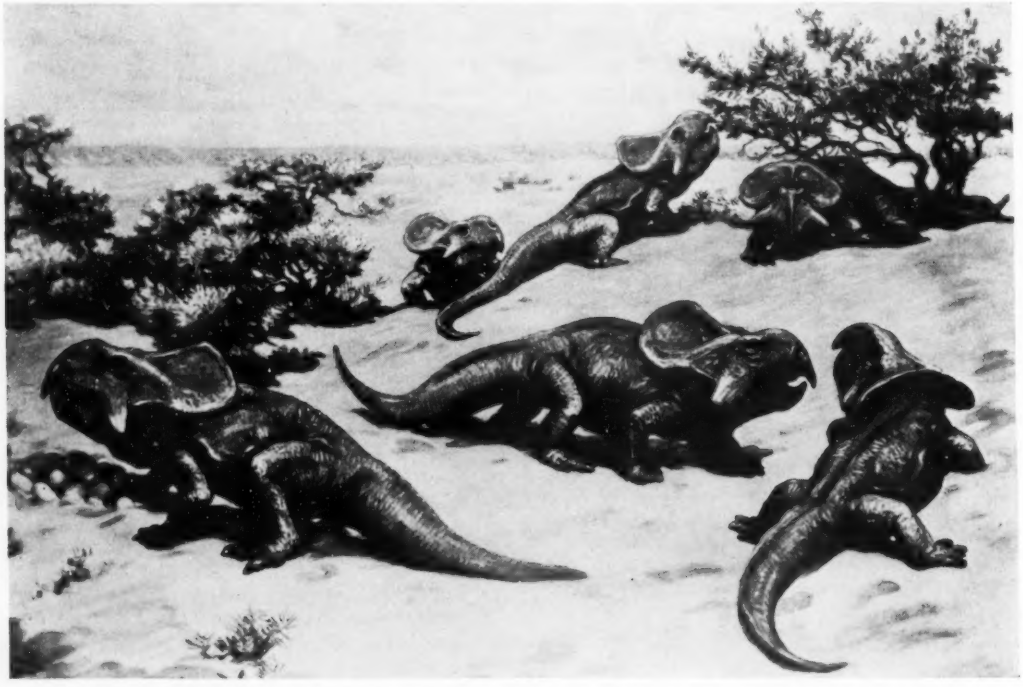
By

DAREL McCONKEY

TWO billions of years ago the new-born earth was a ball of molten rock. Millions of years passed before its crust cooled, its vapors settled, before life came to swim in its waters, and to tread upon its shores.

There was no soil. There were no familiar, stratified, sedimentary rocks. These were to come only with the passage of thousands of centuries, while storms and streams wore down the heights upthrust from the cooling terrestrial surface. Rains fell, silt-laden streams flowed to the sea, and muddy horizontal pages were spread to enshrine in future stone the tragedies of earliest antiquity. On these pages each primordial tragedian wrote his own story: a shell, a footprint, a skeletal petrified body, a scaly twig, a pine cone, a fallen leaf, a tree trunk sealed in swampy slime. From these dead pictographs geology has translated the story of life on earth.

The geologic volume grew. Parts of it were broken and washed away, and turned to pulp for other pages. Millions of once-alive incidents are buried under earth masses hundreds of feet thick, billions have sunk beneath the waves, trillions have failed of preservation, a few have been revealed in outcroppings of rock. But even against the handicap of nature's erratic library methods in keeping the Book of the Ages, a remarkably clear conception has been achieved of a land and its forests in the eons that preceded the appearance of man.



The dinosaur tribe was moving on to supremacy in the animal world when the trees of the Arizona petrified forest were growing. They were conifers, probably precursors to the Norfolk Island pine. This is a photograph of the painting by Charles R. Knight, which hangs in the Field Museum of Natural History, at Chicago.

It was late in the Paleozoic era, and the world was more than half as old as it is today, when traceable ancestors of present-day trees developed. The Carboniferous period, during which coal was formed, was an era of tropical climate and lush vegetation. Among the ferns, horsetail rushes, and giant club mosses, grew *Cordaites, Walchia,* and *Voltzia,* ancestors to the oldest types of living trees, the conifers. But there are no trees in the carboniferous stone we burn as coal which are definitely like the trees living today.

Days and nights, moons and seasons past all human imagining transferred terrestrial time to the Mesozoic era, the Age of Reptiles. The dinosaur tribe was moving on to supremacy in the animal world when the trees of the Arizona petrified forest grew, in the Triassic period. They, too, were conifers, probable precursors to the Norfolk Island pine.

If, in this necessarily syncopated history of the earth and its trees we move on, quickly, to the Jurassic period, let the reader be undeceived, for the fifty million years that inclose Trias and Juras time did not pass in a twinkling. From the earliest of the reptilian tribe in late Paleozoic or early Triassic, this gigantic fauna grew and spread over the earth, reaching the zenith of reptilian sway in the Jurassic and Cretaceous periods.

Indications of cypresses yet to come are found in *Brachyphyllum* of Jurassic date, while *Pagiophyllum* forecast further development toward the Norfolk pine.

The culmination of conifers was contemporaneous with the height of reptilian development, but the forests little resembled those of today. Ferns and cycads were comparable in height to the undergrowth of the present time, and the conifer-like trees and gingkos towered above them. Under benevolent climatic conditions, and with the existence of convenient land-bridges, these trees spread over the earth. The story of the evergreens is told in the most stammering language in Jurassic chapters, and science is unable to trace their genealogy with sufficient definiteness to name the most ancient of contemporary conifers. Cone-bearing trees occupy an important place in the world's present-day silviculture, but, as a race, they have been on the decline for a period equal to more than two millions of consecutive human lifetimes.

The gingko stands today as the most aristocratic of trees. It was, in the Jurassic, one of the most abundant and widely distributed arboreal species. It spread its fan-shaped leaves above the soil of every land. For the duration of the 120,000,000 latter years it has changed hardly at all, and is today the only existent plant to represent a species, genus, family, and order, all in one. Stress of climate and geography caused it finally to settle for a last stand in the Orient, where it would have become entirely extinct except for the veneration of Chinese and Japanese priests, who cultivated it about their temples.

Second only to the gingko in the royal family of the trees are the Sequoias. They, too, date back to Jurassic graveyards. In the cathedral quiet of their California groves one might, had he but ears to hear, listen to the rustle of Sequoian legendry relating tales of the saurian epoch, of a time when these monarchs among trees spread their branches over every land, of their final, proud exile as a doomed but regal race on the western coast. When transplanted by man in recent years to Europe, to Morocco, to Australia, and New Zealand, their roots may in congenital memory have recognized soil that was once their own.

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Patient, tireless time rolled on, inscribing its stories in the mud-flats and swamps of primordial ages, and we come to the chapter marked "Cretaceous."

The great saurians were threading the long road toward extinction, and flowering plants were on the ascending curve of development when the laminated ledgers of the rocks suddenly open to reveal the earliest sycamore, an early Upper Cretaceous resident of North America. The sycamore witnessed the passing of the dinosaurs, and the entire development of the mammals, and in its existence as a family counts human evolution as but a passing incident.

It is believed that flowering plants, which are first found in Cretaceous records, originated in the then tropical Arctic, and migrated southward. Practically all the trees of this early period had world-wide or hemisphere-wide distribution. The Araucaria, or Norfolk pine, long promised by previous tree-evolution, developed almost to its present form. It is now native to Norfolk Island, near Australia, but has been transplanted in western America. Poplars, willows, and sassafras also date back to the closing days of the saurians. Willows are believed to have furnished material for Swiss lake-dwellers to weave the first baskets ever made on earth, between 7,000 and 5,000 B. C.

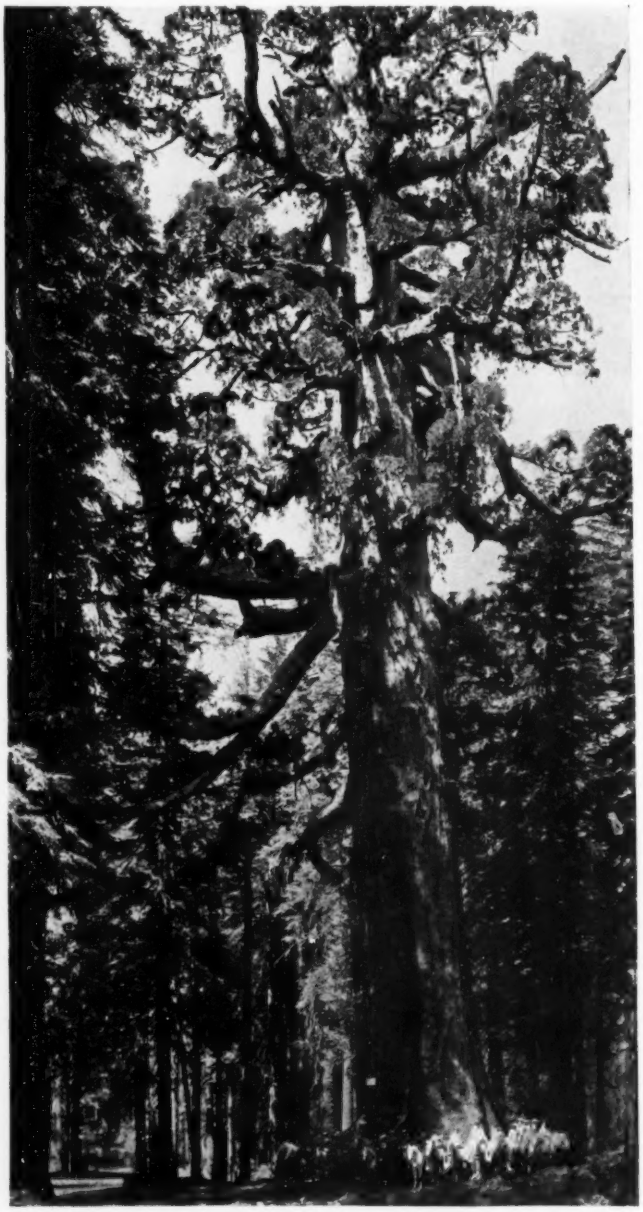
Mid-Cretaceous brings to notice the first evidence of walnut and persimmon trees. Walnuts, judging from their presence in Swiss lake-dwellers' ruins, were part of the Neolithic dietary 8,000 years ago. Persimmon, a member of the ebony family, in common with sassafras, is a plant of tropical family that chose temperate climes for its abode. Persimmons were the first American fruits to be described by De-Soto in 1577.

In Upper Cretaceous time, the flowering plants became cosmopolitan, and crowded ferns, cycads, and conifers into the background. The forests were mixed, with both conifers and hardwoods, but the latter were on the upgrade, the former on the decline.

Many contemporary trees date back to the complete extinction of the great reptiles in Upper Cretaceous, and witnessed the division of North America into two parts, when an inland sea extended from the Gulf of Mexico northward to the Arctic Sea. These include birch, beech, bald cypress, magnolia, tulip-tree, sumac, oak, holly, dogwood, spice-bush, maple, eucalyptus and palm.

Beech is probably the oldest existing tree-name in the world. It is derived from the Sanskrit "boko," meaning "letter," and "bokas," or "writings." The Anglo-Saxon "boc," the German "buche," and the Swedish "box" all mean "book," and probably originated from the fact that old Runic tablets were of beech-wood. Beech remains were found in ruins of Swiss lake-dwellings. Beech mast, or "buck," for feeding swine, was a subject of early medieval legislation, and gave its name to the English county of Buckingham.

At the dawn of the Upper Cretaceous oaks diverged from *Dryophyllum*, a tree which was also in the ancestral line of chestnuts and beeches. The Greeks believed the oak was the first tree, and that acorns were the only human sustenance before Demeter introduced food on earth. The oak was an object of worship by the Druids, whose name is said to have come from the root "deru," Celtic word for oak. The Druids believed the spirit of the oak took refuge in the mistletoe during the winter, and they took the mistletoe into their homes at Christmas so the tree-spirit would bring fertility to members of the household. The Romans used oak-leaves as a civic crown. Anglo-Saxons believed that if oak trees were made into ships they would preserve English liberty forever.



Second only to the gingko in the royal family of trees are the Sequoias. At one time they spread their branches over every land, finally being exiled on the western coast of North America.

Eucalyptus, the lofty giant from Australia, which has, in human history, been extensively planted in California, and grows sometimes 400 feet high, was so common in Cretaceous chronology as to be represented in America by seven species. Many other trees not at present native to this country flourished on the North American continent. They include the palm, fig, cinnamon-tree, and breadfruit.

The reader of earth's dramatic diary pauses. The fourth, and final, act is about to begin. It is a short act, covering a period of only sixty million years. When it is done the student of the terrestrial drama will look out the window to find himself, in subordinate role, living within the action of the script he peruses. He bends again to the geologic cuneiform, and footlights flash on, illuminating the vivid Cenozoic setting.

Aweary of gigantic saurians, the Director has peopled his stage with a new zoological race, the mammals, a small race, ranging from the size of a mouse to the size of a sheep, including little *Eohippus*, the three-toed horse. But there are new trees in the Eocene background. There are the first known ash-trees, hickories, chestnuts, gums, lindens, redbuds, and elms.

The ash is a member of the olive family. Norse legendry tells that Yggdrasil, the ash-tree, held up the heavens, and from Yggdrasil Odin made the first man.

Under the Oligocene subtitle the careful reader envisions a new setting. The flat, featureless landscape, characteristic of former backgrounds, has altered. The early heights of the Rocky Mountains may be seen. The inland sea has filled with sediment, and wide-spread marshes exist. Three-toed horses have increased to the size of a sheep; there are sabre-tooth cats as big as a lynx; and more variety of dogs (*Continuing on page* 198)

THE CORPS ON REVIEW

By ROBERT FECHNER

Director, Civilian Conservation Corps

ON March 31, the Civilian Conservation Corps will have completed two years of what I consider one of the most interesting and most valuable activities our Federal Government has engaged in for many years. It therefore seems proper and desirable to record the purposes and results of what has been accomplished by Emergency Conservation Work or the C.C.C., as it is popularly known, from the angle of personal observations which the Director has had the opportunity to make.

To me the work of the Corps has been of absorbing interest. The appointment as Director came not only unsolicited but as a complete surprise. I was in Plainfield, New Jersey, on March 22, 1933, when I received a long distance telephone call from the White House asking me if I could immediately come to Washington. I had engagements that I could not break but over the telephone it was quickly arranged for me to meet a representative of the President who would convey his message to me. That evening I was handed a copy of a bill that had been sent to Congress by the President, proposing the setting up of a vast army as a measure partially to relieve unemployment and at the same time to accomplish useful work.

I was informed that the President wanted to discuss the matter with me with the possibility of naming me as Director of the work. I hesitated to agree to the request because of my inexperience in the type of work proposed, as well as my reluctance to give up the work in which I have been engaged practically during my entire lifetime.

Several days later, however, I met the President in the White House. I had known him during the Woodrow Wilson Administration and I was fully acquainted with his deep interest in all problems affecting the welfare of the people. I also knew of his keen interest in the general subject of conservation.

The President presented his ideas about this proposed program in such an interesting way that I immediately accepted his invitation to head the proposed organization. I have never regretted my decision for in all of my activities I have never been connected with any work that has brought more personal pleasure and satisfaction than has this effort to help a great army of unemployed young men, while at the same time I could actually see progress being made in repairing some of the disastrous effects of prodigal use of our great natural resources.

Congress enacted the legislation and the President signed the bill on March 31, 1933. On April 5, 1933, the Director was appointed and an Advisory Council set up to develop the machinery and to carry out the purpose of the President. When I first met my Advisory Council I found that every member of it was a total stranger to me. I also found, however, that each one of them was as keenly interested as I in this new venture. We were engaged in an activity that had no precedent to guide it, not even a nucleus on which the organization could be built and we represented four Federal Departments that although they had been established for many years, had never before undertaken to cooperate closely with each other. Dismal prophecies of dissension and failure were not

lacking, but, within the group itself, there was nothing but a manifest determination to make a success of the new venture.

The President had forcefully called attention to the great possibilities of helping unemployed youths and of rehabilitating our devastated forest areas, at the same time creating values that would bring increasing returns to the nation as the years pass. There were people, it is true, who said that many of the unemployed had reached a point where they no longer desired a job and would not work if they could avoid it. The prompt response of hundreds of thousands of young men, as well as war veterans, to the opportunity to enroll was the most effective answer that could possibly be given to these statements. These young men and war veterans were not only anxious to become self-supporting but they were proud of the fact that by enrolling in C.C.C. camps they could render material support to their unfortunate dependent families. There are literally thousands of letters in our files from these boys, from their families, from welfare organizations, clergymen and others, all testifying to the beneficial effect that enrollment in the camps produced on the men themselves and on their families.

He can take it, too . . . Mr. Fechner receiving a first-aid demonstration during a visit to a C.C.C. camp in the West.

Most of the young men had never had a job and therefore were unfamiliar with work. There was grave doubt that they would prove adaptable for the work to which they would be assigned. All of these fears proved to be groundless because under the skilled guidance of trained and experienced men, they quickly developed into efficient working units that have literally accomplished miracles. We have an old saying to the effect that "It's an ill wind that blows no one good" and this was especially true in our case.

Due to the long continued depression there were many men unemployed who had just exactly the training and experience that was so vitally necessary in Emergency Conservation Work. These men, under normal conditions had always been able to command and earn substantial salaries, running up to $10,000 or more a year. As this work was to be a relief measure it was felt that high salaries should not be paid. This was carefully explained to these experienced men and without exception they readily agreed to accept the jobs offered at comparatively low salaries and they have given unreservedly and with the utmost enthusiasm, the very best of which they were capable, in carrying out their part of this work. The individual enthusiasm of these men has been one of the finest features of this whole program.

When the great majority of the enrollees reported at work camps they plainly showed the effect of the industrial depression. Undernourished, inadequately clothed, without proper medical attention in recent years, they came to the camps discouraged, resentful and, in some cases, bitterly hostile toward everything. A few days or a few weeks effected a complete change. The plain but wholesome food, the regular hours for work, recreation and rest and a realization that they were being given an opportunity to rehabilitate themselves and their families, a clear understanding that the work in which they were engaged had definite value that would be of a permanent character and, above all, a final appreciation that their government was vitally concerned in their welfare and was willing to do everything within its power to try to be helpful in the emergency with which they were confronted, quickly restored the enrollees to normal American manhood.

They responded by rendering a good day's work on the task to which they had been assigned; by being careful of their conduct in the community where the camp was located. They quickly developed a pride in their personal appearance; in the care which they took of the government property that had been issued to them; in their response to the simple discipline that was established and maintained by those in control of the camps. Not only did they respond willingly and cheerfully to their ordinary duties but in the many opportunities that were offered for exceptional service frequently involving personal danger to the individual, they never hesitated.

All this conservation work is not so simple as some may think. Floods and forest fires always exact their toll of human life. Even in the ordinary activities of every-day affairs, there are frequent opportunities calling for quick decisions that may save a fellow-man from injury or death. Our files are full of authentic instances of boys who have responded with all the enthusiasm of youth to calls where danger was self-evident. In fighting forest fires they have

performed a service that can never be adequately praised. It has been my pleasure to sign personal letters to a very large number of individual enrollees and, I regret to say in some cases to the families of enrollees who lost their lives in the service, expressing appreciation of a grateful Government for their heroic actions. Very recently I have approved the issuance of a "Certificate of Valor" to be awarded to enrollees in recognition of exceptionally courageous action in service beyond the pursuance of usual duties.

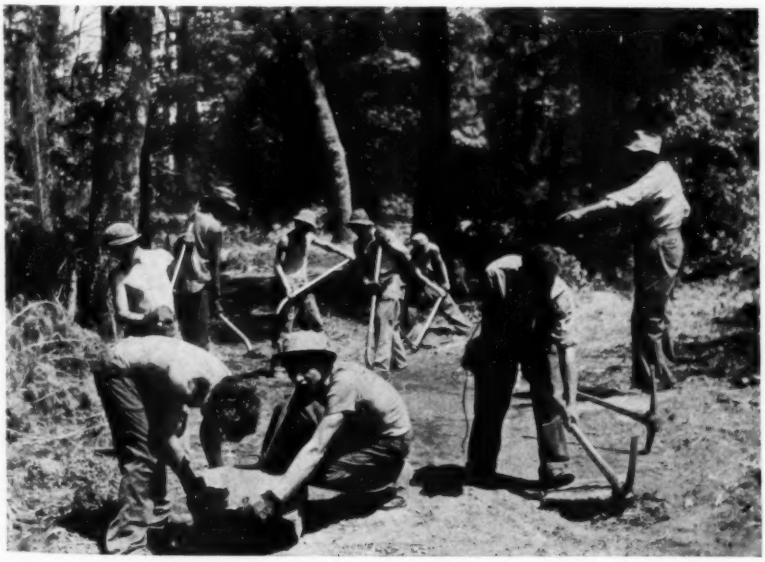
While it has not been my privilege personally to visit more than a small percentage of our camps, I have seen enough and I have read a sufficient number of reports from authentic sources to convince me that the original purpose for which this organization was set up has more than been accomplished.

Engaged in an activity that had no precedent to guide it, the C.C.C. has more than served its original purpose, Mr. Fechner says.

The records of the last two years disclose that in addition to relieving acute distress and building up national health and morale, the Civilian Conservation Corps has made possible the completion of an unprecedented amount of protection and improvement work on our national and state forested domains. Our forests and parks have been given new protection from fire, disease, insects and pests. Soil erosion prevention operations have been completed on a nation-wide scale. Probably the most spectacular work has been accomplished in the field of forest fire prevention. Fire losses over nationally owned forest and park lands have been held down well below comparable years during the two seasons that the C.C.C. has been in operation. This last summer was one of the worst fire hazard years in recent history. It was natural that there would be a great number of forest fires, and yet I am told by competent authority that losses would have been much greater had it not been for the thousands of miles of truck trails and fire breaks constructed by C.C.C. men, the better facilities for detecting fires that have been provided by the erection of numerous fire towers and lookouts, the installation of thousands of miles of telephone lines to give quicker communications, the installation of a modern portable short wave radio system and the presence of a large number of C.C.C. men in the forests.

This is the reason why I feel the work is the most important and most interesting with which it has ever been my privilege to be connected. I believe that my own feeling reflects that of all others who have had any part in the Corps. Without this conviction there could not have been the devoted enthusiasm that was necessary to its success.

This work should go on; it should become a permanent feature of our federal activity. If possible, it should be expanded because there is practically an unlimited amount of worthwhile work that should be accomplished with the least possible delay. It is a type of work that is generally beneficial to the entire community and in the development of our forest and park areas for recreational enjoyment, we will be offering all of our citizens opportunities that only a few of them have hitherto enjoyed. Because of the increasing amount of leisure that will be at the disposal of all of our people in the future, I consider it an obligation of our federal and state governments to make these recreational areas as accessible and as beneficial as possible.



Not only should the C.C.C. go on, Mr. Fechner believes, but it should be expanded and become a permanent feature of our federal activities.

Because a real service is being performed that not only is helpful to those directly engaged in it, but offers opportunities not previously available to millions of our citizens, I am firmly convinced that the C.C.C. has fully justified the faith that the President had in it and that it is returning a value in full proportion to its financial cost.

FORESTRY AND REGIONAL PLANNING

By EARLE S. DRAPER

THE original planner is not the planner so-called, nor the forester, nor the engineer, nor the architect, but nothing more or less than the American farmer. In discussing this with Benton MacKaye he told me of an interesting incident in his experience that exemplified basic regional planning. This was Wilder Farm, in Brattleboro, Vermont, in Windham County. It covered 400 and some odd acres and was operated by two old bachelors and an old maid sister. They planned carefully and watched their pennies. When it came time for them to die their estate amounted to over $100,000, a big fortune in their time. Their farm amounted to a little domain. Aside from the fields of hay and corn and other crops, there were large areas of pasture, apple orchards and woodland, to say nothing of the kitchen garden. A portion of the woodland consisted of a maple sugar orchard. The use of these areas involved not only barns and cow yards, but a sugar house and a cider mill run by water power. Viewed from a little hill nearby, these farm buildings gave the appearance of a little village.

After the old folk died the farm was absorbed in a larger estate, bought up by a wealthy gentleman. Wilder Farm was retained as the name of this larger estate, which comprised upwards of 1,000 acres. This made a still larger domain, about half of which consisted of woodland. The owner desired to develop this woodland on the broadest principles possible, and called in Mr. MacKaye as consultant in forestry. The problem involved not only forest cropping and planting but the development of maple sugar orchards and the selection of picnic groves. The cider mill, still run by water power, was retained. This involved the problem of a steady stream flow and therefore the use of the forest for stream protection purposes. The problem of forest planting and extension involved the matter of the best use of the estate as a whole for agriculture and forest purposes. To complete this unit of development, the Wilder Farm store was established in the village of Brattleboro.

Here is an example of the essence of regional planning and development. The region, to be sure, was only a thousand acres, but it embraced the chief elements of regional living. Thus three major developments come into the picture: forestry, agriculture, and water power development; in addition there were two kinds of manufacturing, the making of maple sugar and of cider. Also there was the industry of distribution, exemplified in the village store.

Suppose, now, the estate should go right on growing. Suppose it came to embrace the whole of Windham County. This would have included a granite quarry at Black Mountain, also a number of saw mills and of grist mills. Carried further it would have brought in creameries, abattoirs, box factories, furniture factories and similar plants. If all of this development were carried out under a single scheme of management, such scheme would amount to a full-fledged regional plan for the internal workings of Windham County. In addition to all this, there would still be a series of problems arising from the more complex processes of the manufacturing industry. These processes are illustrated in the plant of the Estey Organ and Piano Company, of Brattleboro. This plant derives its varied raw material from areas far afield; its finished products, namely organs and pianos, are sent to points far afield. The problems here involved form a portion of the more complex processes of what may be called *inter-regional* planning. As with the organ and piano plant, so with many other complex manufacturing plants, each involves a problem affecting matters right outside of and remote from the region in question, namely Windham County.

The inter-regional aspects just mentioned form a long series of external problems, which a complete plan for Windham County would have to consider, in addition to the internal problems of growing timber, cultivating soil, extracting granite and regulating the flow of water power. Here then is a glimpse of the vast array of problems involved in a complete plan for one small county. The full-fledged regional planner would have to deal ultimately with just such an array. It would seem to imply that a full-fledged regional planner must be nothing short of a super-planner, and that full-fledged regional planning is nothing short of a super-science.

It is obvious that neither a super-planner of this calibre nor a super-science of this extensive range yet exists. But if we are ultimately to cope with the problems, internal and external, of any single county or region, on the basis of a real "planning economy," then we must ultimately develop this super-science. This, we are now just beginning to do. By "we" I mean the forester, the agriculturist, the engineer, the agro-industrial economist, the town planner and the others. All of these are in part planners. It seems obvious that a complete knowledge of so many professions would be difficult to achieve, so that the planner must attempt to achieve rather an understanding which will enable him to interpret the ideals and principles of the sciences which are interested. He must be something more than a coördinator. The land planner should have the skill and ability that comes through understanding to see that each science has its greatest expression and that it fits into the scheme of things in the achievement of a balanced regional economy.

In this big development, in which we are engaged, that of creating a real regional planning, the forester is a vital element. Already he must deal as best he can with these far-reaching questions. The state forester of Maine or of California or of any state between must, within his field of forest development and its many ramifications, act as a state planner. Likewise Mr. Silcox, as head of the United States Forest Service, must act as national planner, in the sense that he must have in mind something more than forestry, and I know that he does. He must realize how the national forestry, state forestry and local forestry units contribute to the better utilization of our national land. He must be ready to adjust his own program to those of other agencies having the same broad objective in mind, which is nothing more than the best utilization of our national domain for the many varied purposes for which it can be used.

I have been taking a far look ahead. Fortunately we do not have to take on this vast array of problems all at once. We can begin with a few at a time. But which? The answer is clear. We should begin with the *source problems*. With respect to forestry, we should begin obviously with the growing stand of timber or wood. What portions of a given county should the forest occupy? How best to utilize the forest stand for its several functions? These questions bring us back to the fairly simple problems involved in managing the Wilder Farm estate. The functions referred to are the classic ones of the present science of forestry. Roughly, they are production, protection and recreation. Each of these has its sub-functions. (*Continuing on page* 197)

EDITORIAL

The Spirit of Conservation

SOME twenty years ago there was found in the pocket of an old ragged coat, hanging in the Chicago poorhouse, a will written in a firm, clear hand on a few scraps of paper. The writer had been a patient of the institution and had just died. So unusual was the will that it was sent to a lawyer who later read it before a meeting of the Chicago Bar Association. A resolution was passed ordering it probated that it might be preserved in the records of Cook County, Illinois.

During the intervening twenty years, the will has been given some sporadic publicity. In these days of turbulent thinking, it merits more frequent and general reading. Not only is it one of the most beautiful wills ever written, but it is an editorial that expresses the underlying spirit of conservation in its purpose to preserve those values that make for lifelong happiness. The will reads as follows:

"I, Charles Lounsberry, being of sound and disposing mind and memory, do hereby make and publish this my last will and testament, in order, as justly as may be, to distribute my interests in the world among succeeding men.

"That part of my interests which is known in law and recognized in the sheepbound volumes as my property, being inconsiderable and of none account, I make no disposition of in this will. My right to live, being but a life estate, is not at my disposal, but these things excepted, all else in the world I now proceed to devise and bequeath.

"Item: I give to good fathers and mothers, in trust for their children, all good little words of praise and encouragement, and all quaint pet names and endearments; and I charge said parents to use them justly, but generously, as the needs of their children shall require.

"Item: I leave to children inclusively, but only for the term of their childhood, all and every of the flowers of the fields and the blossoms of the woods, with the right to play among them freely according to the customs of the children, warning them at the same time against thistles and thorns. And I devise to children the banks of the brooks and the golden sands beneath the waters thereof, and the odors of the willows that dip therein, and the white clouds that float high over the giant trees.

"And I leave to the children the long, long days to be merry in, in a thousand ways, and the night and the train of the Milky Way to wonder at, but subject, nevertheless to the rights hereinafter given to lovers.

"Item: I devise to boys jointly, all the useful, idle fields and commons where ball may be played, all pleasant waters where one may swim, all snowclad hills where one may coast, and all streams and ponds where one may fish, or where, when grim winter comes, one may skate, to hold the same for the period of their boyhood. And all meadows, with the clover blossoms and butterflies thereof; the woods with their appurtenances; the squirrels and the birds and echoes and strange noises, and all distant places which may be visited, together with the adventures there found. And I give to said boys each his own place at the fireside at night, with all pictures that may be seen in the burning wood, to enjoy without let or hindrance or without any incumbrance or care.

"Item: To lovers I devise their imaginary world, with whatever they may need, as the stars of the sky, the red roses by the wall, the bloom of the hawthorne, the sweet strains of music, and aught else they may desire to figure to each other the lastingness and beauty of their love.

"Item: To young men, jointly, I devise and bequeath all boisterous, inspiring sports of rivalry, and I give to them the disdain of weakness and undaunted confidence in their own strength. Though they are rude, I leave to them the power to make lasting friendships and of possessing companions, and to them exclusively I give all merry songs and grave choruses to sing with lusty voices.

"Item: And to those who are no longer children or youths or lovers, I leave memory and bequeath to them the volumes of the poems of Burns and Shakespeare and of other poets, if there be others, to the end that they may live the old days over again, freely and fully, without tithe or diminution.

"Item: To our loved ones with snowy crowns I bequeath the happiness of old age, the love and gratitude of their children, until they fall asleep."

LET'S LOOK TO THE ROADSIDE!

By THOMAS H. MACDONALD

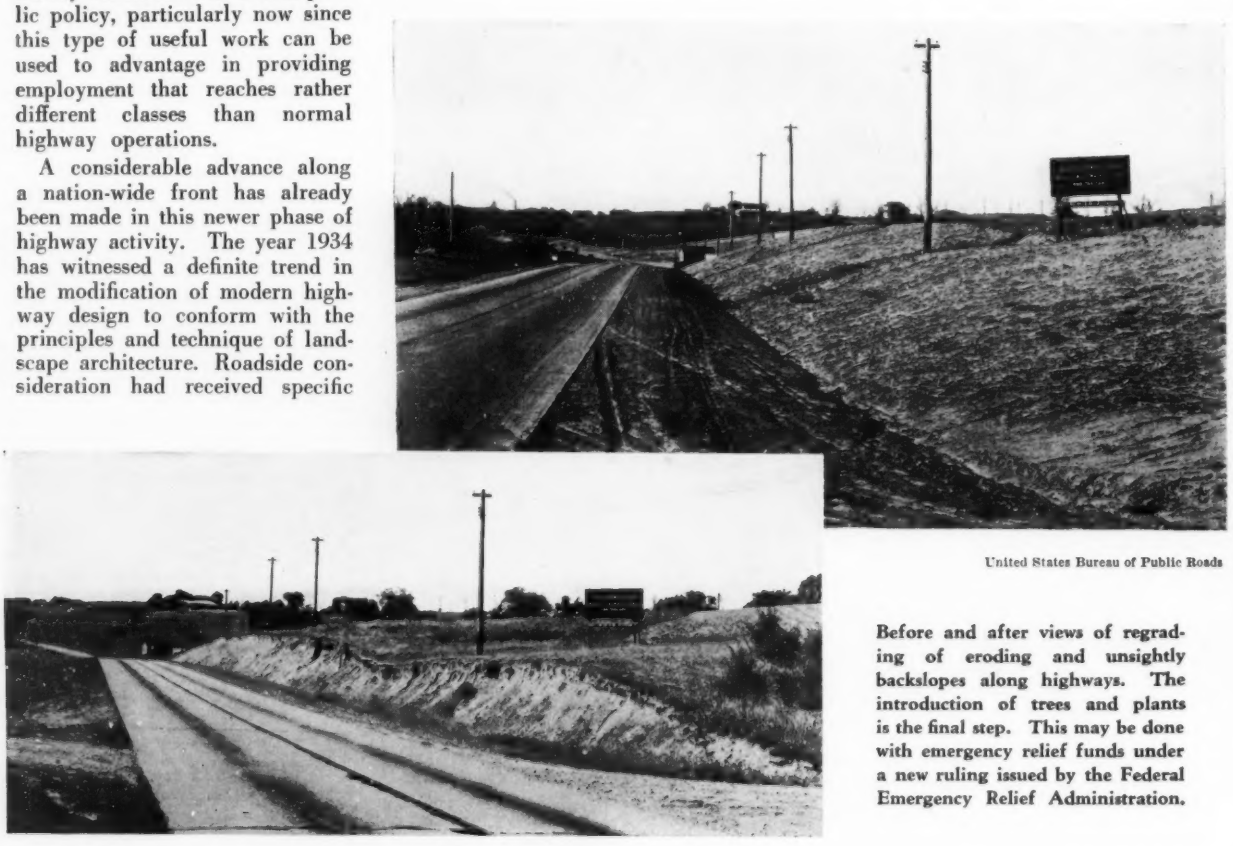
Chief, United States Bureau of Public Roads

SCENIC beauty is a local and national asset of high value. Landscape development of the roadside, therefore, should be recognized as a fundamental consideration in the planning of modern highways. The work of highway improvement cannot be regarded as finished until the natural beauty marred in the process of construction has been fully restored and reasonably enhanced.

It is generally recognized that a very large percentage of the total use made of highways is for recreational and social pursuits. In the land report recently submitted to President Roosevelt by the National Resources Board "it is estimated that recreational use forms at least sixty per cent of the total use of automobiles, a showing which would seem to justify more attention to the control and preservation of roadside appearance." Reasonable expenditures for providing pleasant and beautiful roadsides are wholly consistent with sound public policy, particularly now since this type of useful work can be used to advantage in providing employment that reaches rather different classes than normal highway operations.

A considerable advance along a nation-wide front has already been made in this newer phase of highway activity. The year 1934 has witnessed a definite trend in the modification of modern highway design to conform with the principles and technique of landscape architecture. Roadside consideration had received specific attention in only a few states when "the appropriate landscaping of parkways or roadsides on a reasonably extensive mileage" was emphasized in the Public Works highway program of June, 1933. At the present time, however, practically every state highway department has work of this character either under way or contemplated. The indications are that nearly 1,500 miles of roadsides will have been improved with the first allotment of recovery highway funds made available to the states for this purpose. An equal or larger additional mileage of roadside improvement is currently programmed in accordance with the regulations governing expenditures of Public Works funds as provided in the National Industrial Recovery Act.

The surface features of a highway as seen by the motorist are the primary concern of roadside improvement. Because of practical requirements of safety as well as esthetic considerations, the highway engineer is attempting to prevent unsightly and wasteful erosion along roadsides in an effort to reduce as far as possible the burden of repeatedly cleaning roadway ditches. Community pride, through publicly supported regulatory legislation, is assisting the highway engineer to eliminate unsightly dumps and ugly structures as well as unauthorized billboards, in the common effort to make the roadsides neat and clean. The preservation of trees, the encouragment of wild flower growth along highways, the opening of vistas, the planting of highway slopes and intersections, the enframement of grade separation structures and other features, the improvement of approaches to towns and communities, and



United States Bureau of Public Roads

Before and after views of regrading of eroding and unsightly backslopes along highways. The introduction of trees and plants is the final step. This may be done with emergency relief funds under a new ruling issued by the Federal Emergency Relief Administration.

the construction of footwalks for pedestrian safety, indicate some of the possibilities of roadside work. It is of particular interest at the present time that ninety cents or more of the roadside improvement dollar goes to labor. Almost every community has an opportunity and a definite need for work of this character.

Roadside improvement consists essentially of fitting the details of highway construction into close relationship with the natural surroundings. It is also definitely useful in the promotion of safety, the prevention of erosion and snow drifting, and the reduction of maintenance costs. Improvements may be made in connection with the construction of new road surfaces or may be made independently in connection with the modernization of older roadways.

There are several basic considerations which must be given careful thought at the outset in any roadside program of work-relief. First, a properly located highway of suitable design should be selected so that whatever is done to improve the roadside may be reasonably permanent improvement. It is essential that highway right-of-ways be sufficient to provide needed space for tree planting and the adequate control of the improvement. Many of the state highway departments are effectively using land improvement easements for an incidental amount of landscape grading and planting where it is not feasible to widen the right-of-way by outright purchase. Land and property values as well as highway values are enhanced by incidental improvements of this cooperative character.

Then there is the necessity of establishing a proper working organization and policy to carry on the work. This matter of technical administration certainly deserves thoughtful study. The details of a comprehensive program of roadside development will be more efficiently served if entrusted to competent responsible authorities. Wherever possible, it is desirable to take advantage of the experience of an existing practical construction and maintenance organization, adding and properly coordinating with it the new landscaping function and specialized personnel.

United States Bureau of Public Roads

United States Bureau of Public Roads

Since the key to highway improvement is to preserve as far as possible existing natural beauty, as shown at left, the removal of abandoned portions of old roadways and the cleanup of highway slopes, as pictured above, is the first step toward the planting of trees and shrubs that aim to fit the road into its surroundings.

Finally a reasonable amount of seasonal after-care of planting and seeding operations should be allowed for as an essential requirement of a programmed improvement until the plant material is satisfactorily established. A good beginning in accordance with a carefully prepared plan is the foundation of any planting program, however small.

Since conservation measures form the key to highway improvement policies, the immediate problem is to preserve as far as possible the existing natural beauty along a selected improvement. The modification of the standard highway cross-section by variation in the flattening and rounding of cut and fill slopes should give due consideration to possible inexpensive adjustments in the work of saving trees so that the resulting cross-section will be in harmony with the landscape. The preservation and control of scenic assets already afforded by nature in some cases makes the supplemental (*Continuing on page* 197)

THE GILA WILDERNESS

The Land of the American Aborigines Which Has Held Its Mystery Through Four Centuries

By ERLE KAUFFMAN

FOUR hundred years ago, the Friar Marcos de Niza, searching for the fabulous "Seven Cities of Cibola," came upon a yucca-studded desert that threw its plateaus and mountains into the sky with such wild abandon that he could not resist its lure. As a consequence, and accompanied only by his faithful negro slave, Estevan, he turned his face toward the highest peak and became the first white man to set foot in that vast area of mountains and desert known today as the State of New Mexico.

After the good Friar came Coronado, and later Juan de Onate, to settle at Rio Chama and Santa Fe. Within a century this flowering desert with its grassy mesas and forested ridges became the most highly treasured of the Spanish possessions, and when the country was ceded to the United States in 1848, cattle and sheep had claimed its ranges and the myth of the pueblo people that a vast treasure in turquoise lay hidden in its black hills had lured legions of miners.

Then came the era of great development. Cattle and sheep grazed every plateau; pines, firs and spruces were sacrificed in the name of progress; paved roads swallowed century old trails; gasoline stations appeared where Indian trading posts and wayside missions once stood; miners gutted the earth in their search for wealth. In four hundred years New Mexico had surrendered its primitive to the march of time—that is, almost. One area remains, an area so wild, so remote, that the revengeful Apaches, at a time when a large portion of the entire State was in wilderness, held it as a safe refuge, a sanctuary, to which they could retreat for rest, or to gather their forces and to plan new depredations. Its mystery of buttes and mesas, its dramatic peaks of volcanic ash and basalt, its black winding canyons, defied even the most daring of the hard-riding soldiery.

This untamed area, nearly 600,000 acres in extent, the last large remnant of the wild paradise that lured the good Friar Niza and the conquering Coronado, lies in the upper Gila River drainage, less than fifty miles north of Silver City. It is in the very heart of the Gila National Forest—beyond all roads, where only the music of nature reaches one's ears, or, if one is quiet beneath some canyon wall, the faint echoes of an Apache war cry.

It is a country that is forgotten; yet it is as new and as strange to the wanderer today as it was to the Friar and his faithful black slave four centuries ago. It is a country of timber and grassland, of lonely trails, of buttes and mountains that reflect astonishing colors in the sun; it is a country where wildlife abounds, a closeted haven for the plant and animal life of the old Southwest. Elevations begin at 4,000 feet and reach beyond 10,000 in the bolder uplands. The highest mountain is Whitewater Baldy, which thrusts its uppermost boulders to a point 10,892 feet above the sea. There are six peaks within the area with elevations in excess of 9,000 feet. On the whole, the country is rough and precipitous, but there is always relief in the broad mesas of grassland or plateaus of ponderosa pine, Douglas and white fir, and Engelman spruce. Then there are the lesser trees, the junipers, the pinons, the oaks.

The wilderness lies on the southerly end of the Continental Divide. On its west the Mogollon Mountains throw up a barrier to the lesser ranges and desert that lie beyond; to the east is the Black Range and the mysterious Black Mountain Plateau; to the south the Burro Mountains and Cooks Range, and far beyond the endless Florida Plains. To the north the Tularosa Mountains form a natural boundary. And through its heart courses the Gila, the river of mystery, of pueblo myths.

The American aborigines, who made beads and pendants of turquoise, used the waters of the Gila for irrigation many centuries before the Friar Marcos de Niza made his great discovery. Remnants of their engineering skill still exist.

But it is in the deeper regions of the wilderness that these early Americans erected their greatest monuments—cliff dwellings that engulf one with wonderment. These dwellings lie in the bosom of the Gila, undisturbed and intriguing. Nowhere else may they be seen in such primitive, such natural surroundings. They leave one with the feeling that they are still inhabited, despite the centuries that have passed since mountains were carved in their making.

There are four such dwellings in the Gila, all in the face of an overhanging cliff. The largest is nearly circular and about fifty feet in diameter. The arched rock forming the roof is about ten feet above the center of the

The Gila Wilderness, in the Gila National Forest of New Mexico, one of the largest and most picturesque Primitive Areas in the Southwest, will be explored in August by The American Forestry Association's "Trail Riders of the National Forest". It will be the first expedition of its kind ever to enter the region.

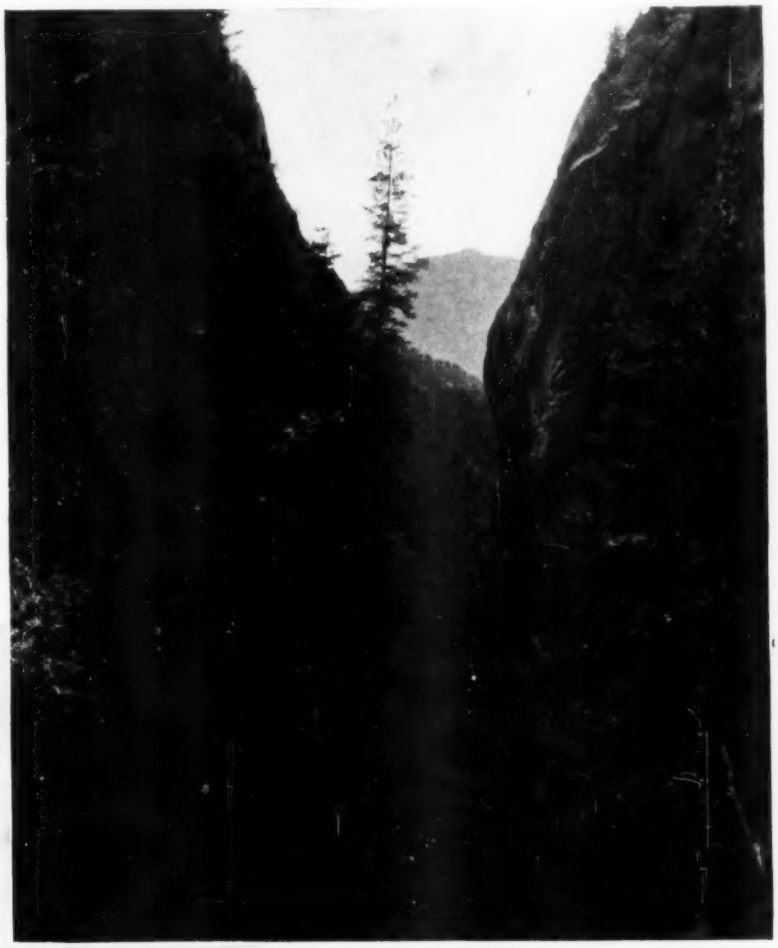
The expedition will leave Chicago on August 21, returning on September 2. Both men and women, as well as older children, are eligible to join the party, which is conducted by the Association on an actual cost basis in the spirit of education and outdoor recreation.

Two other expeditions are scheduled for this summer -- one, in early July, into the Flathead-Sun River Wilderness of Montana, and the other, in late July, into the famous Bridger Area, in the Wind River Mountain Range of Wyoming.

Write The American Forestry Association, 1713 K Street, Northwest, Washington, D. C., for further information concerning these wilderness expeditions.

floor. In one corner is a small room built of rock and adobe and provided with a small entrance window. Natural archways lead into two smaller tributary cavities. These are divided into a number of small rooms by walls built of adobe and small stones, which are today in such good state of preservation that finger prints made in the adobe when the walls were built can still be plainly seen. Above the small doorways and windows pieces of timber were used, which are perfectly preserved. One of the cavities, high on the face of the cliff, has never been explored. As the cliff overhangs it, to enter by means of suspended ropes is impossible. It was intended for defensive purposes, as small windows are the only openings.

When these cliff dwellings were first discovered, a number of relics in the shape of sandals, baskets, water vessels, cooking utensils, and spears were found. Corncobs can still be found in numbers.



In the heart of the Gila Wilderness—the land which holds many unknown secrets and which has remained unchanged through four centuries. At left, one of the cliff dwellings hidden deep in this country of the aborigines.

Somehow those faint echoes of the Apache war cry are never lost in the Gila. The names of Cochise, Arizona Kid, Chato, Nachi, Loco, Victorio, and perhaps the most notorious of them all, the merciless Geronimo, seem carved in every canyon wall. Without much imagination, when one rides the trails of the Gila, the faces of Gayathlay (one who yawns), the real name of Geronimo and Cochise, may be seen in their war paint, planning the strategy which made them the most feared of warriors. You see them there, squatting under a great pine, surrounded by their chiefs, drinking in the healing qualities of the wilderness so that they may go forth on the morning sunrise again to plunder and to kill.

The Gila is like that—a wild paradise that rests and restores, yet ever vibrant with the drama that played back and forth across its stage when America was a world unknown.

ILLICIT TRAFFICKING IN BEAVER

BY CALVIN RUTSTRUM

PART III

THE regimenting of certain major outlaws as wardens struck a peculiar note in the North Country. Those remaining outside of the law—and there were many—failed to be concerned. There was no recognized *esprit de corps* among them and, consequently, there was no feeling that the transposition was a breach of ethics. It seemed, however, that in the minds of the transposed outlaws there was a consciousness of sportsmanship having been trespassed upon.

Instead of taking up their duties in a clandestine manner, they openly announced their change and emphasized the virtues of having taken an oath to uphold the law. This exposing of their new identity and declaration of intent was an open challenge to that great host of outlaws who still remained.

The plan of the state was to place one of the transposed outlaws with an experienced warden, but this plan immediately ran amuck. The new wardens were compelled to complain, after their first journey into the wilderness, that the men assigned as companions could not endure their mode of travel. Sick and trail weary, the experienced wardens were abandoned on the trail and soon returned to the settlements.

The situation was brought to a speedy solution by allowing the new wardens to select suitable companions. A number of rugged individuals were ushered into service while a like number of incompetents were dropped out. With great amusement and avid anticipation, eyes everywhere turned to this anomalous procedure to strike at the offenders.

At this time the two worst contenders in the traffic were operating on the east side of the beaver country. Their reputation as outlaws was of long endurance, and their defiance of former wardens had never been effectively contested. They were now marked in pair as "Public Nuisance Number One," since the trio on the east end of the district had been disbanded, and an offensive was launched against them. A capable warden, who had long been in the state service, formed a partnership with one of the transposed outlaws and proceeded to lay plans for their elimination.

Before daylight coffee was steeping in the cabin and as dawn crept in the wardens were moving toward the beaver country.

To travel sixty-five miles or more in search of the outlaws during mid-spring was no small undertaking. But it was at

a time of year when beaver pelts were at their best; and the merit of striking at that time was certainly well known by the new wardens.

Before daylight, coffee was steeping in the wardens' cabin; and when the first rays of dawn crept over the lush waters of the northern spring, the two men moved toward the beaver country. Late in the morning a mist-fine drizzle began to fall which wet them through. At noon the rain turned to a wet snow and the temperature seemed to lower. A fire was built and a shelter cloth stretched over a windfall to ward off the wet flakes while the men dried their clothes and brewed a quantity of tea. When they took up their journey again, the snow had turned to ice-like crystals and the temperature continued to lower. A freeze-up was threatening.

Trail weary and wet, the wardens made camp an hour before dusk. There was a humorous reference made to their repeated submersions in the freezing overflow, but neither uttered a complaint. Some apprehension, however, was felt over the threatening freeze-up. A half inch of ice on the overflow would not help travel in their small collapsible rubber boat—the same boat that had been such a boon in former outlaw days. When the evening meal was over, the wind died entirely, and a severe unrelenting cold gripped the forest.

In the glow of the receding fire a half dozen empty beaver stretchers lodged against a tree and a number of others were filled with hides like so many drum-heads drying in the air.

Outlaw tendencies, apparently, are not easy to shake off. As dusk came on, two deer were seen moving along the alders about fifty yards from camp. The former outlaw's eyes showed a covetous twinkle; and when his more legal-minded companion touched his arm admonishingly, he snapped a quick reply that no man could "tough it" very long without meat. In another second he had snatched a rifle and was gone. He had no more than moved from sight when the rifle cracked with a resounding sharpness. In another moment two deer appeared and tried to cross the swelled stream below the camp. One began to founder in the ice.

The hunter presently made his appearance. He saw a lone deer leave the water at the opposite side of the stream but disregarded it. Instead, he leaped into the water and with a case knife in his hand, made for the wounded deer. The man on the bank watched the cruel process. The animal's throat was ripped open with the knife and before its struggles were really ended, the former outlaw had dissected the hind quarters and the loin. His companion meditated as he watched from above and wondered if the State had been wise in selecting outlaws to enforce the law.

When daylight broke on the second day, winter seemed to have taken a new hold on life. Only the fast water was moving. Ice of such thickness had formed on the overflow as to make it impossible for the wardens to use their rubber boat; yet it was too thin to support a man's weight. The regular warden began to think that possibly the deer which his former outlaw companion had killed might, after all his legal qualms, prove invaluable if they were now to be marooned in the country. But his companion had no such thought. Through years of outlawing he had driven some hard bargains with nature, and he did not purpose to be more than slightly retarded by the present circumstance. He explained that if the cold continued, they would very likely be able to walk on the ice before the day was over, and that in the meantime they would break ice when it became necessary to cross the overflow.

Wisdom and past experience prompted the thought of carrying the rubber boat open instead of collapsed. Four times during the afternoon they broke through and, save for the boat, might easily have come to grief.

The third day held out a kindly hand to the wardens. They managed to travel over back waters and overflow country on ice that was amply strong to carry them and their packs. But on the fourth day a tragedy occurred that would have dampened the spirits of less sturdy individuals. On crossing a river in their collapsible rubber boat, they became impounded by the loosening of a large section of ice; and in their effort to liberate themselves from the piling debris, their boat collapsed and together they were thrown, with their equipment, into the river.

They were carried into the rapids a hundred yards below, where the fast water dispersed the ice flow and liberated them into the cataract. Bruised and suffering from exposure, they managed to extricate themselves from the engulfing current. But there was no time for physical rehabilitation. Their entire equipment and food was being carried downstream. After (*Continuing on page* 199)

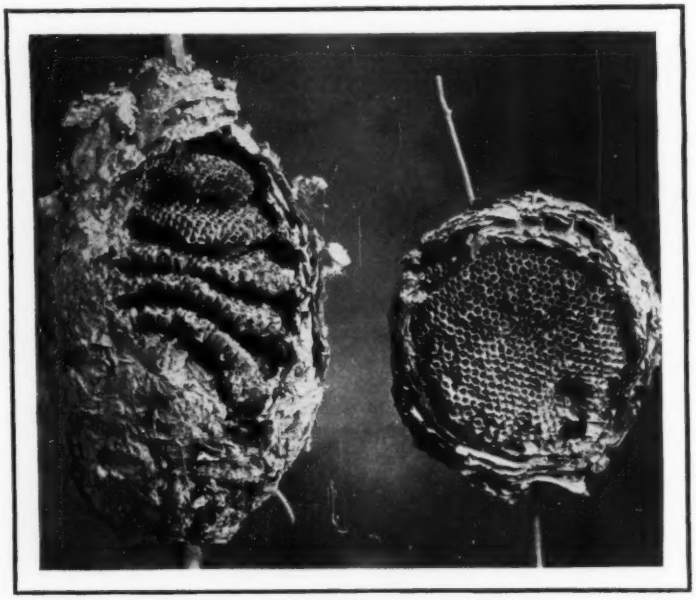
FIELD AND FOREST FOR BOYS AND GIRLS

WASPS--THE FIRST PAPER MAKERS

By JOHN HARVEY FURBAY

A FEW hundred years ago there were no libraries filled with books. There were no daily newspapers printed in twenty-page editions for two cents. There were no beautiful boxes of stationery on which to write to one's friends. There were no paper bags for groceries; and no beautiful prints of wall paper. People scrawled messages in the sand, on stones, and later on animal hides which had been tanned. Paper seemed unknown to all living things except the humble little wasp.

From these little insects man got his idea of making paper from wood. Often observing the large paper nests they made in the trees, he noticed that the wasps made countless trips to and from neighboring decayed logs and the trees. It was apparent that these repeated trips were making the nest grow larger and larger. The decayed wood was being carried in their mouths, he concluded, and, after being mixed with the juices of the mouth, was being plastered in position on the nest where is quickly dried into rough, gray paper.



The interior of a wasp's nest is built layer on layer, like a huge cake.

His next problem was to find out what this juice was like which the wasp mixed with the chewed-up wood. After years of experimenting, he succeeded in finding a substitute for the wasp's saliva, and paper of a crude sort was made. As far as we know, the Chinese were the first to make paper from wood pulp or other vegetable material. Records show that such a process was known among them two or three centuries before Christ. Strangely enough, they have improved their methods very little since then.

It is believed that the Saracens first brought paper making into the Western world. The first paper mill in Europe was built by them in Spain. Paper making began in France about 1189; in Germany about 1380; and in England about 1330. The first paper mill on the American continent was built in Philadelphia by William Rittenhouse in 1690.

The great industry built up around the simple process learned from the wasp makes it worthwhile to know this interesting insect better, for his paper nest is by no means the only interesting fact about him.

Wasps are closely related to bees. They build combs which resemble those of bees, and they live in colonies. There are two groups of wasps: solitary wasps such as the common mud daubers; and social wasps. The latter are the paper makers. The most common social wasps are the hornet and the yellow jacket. The paper hornet builds a far more elaborate nest—frequently large enough to fill a bushel basket. The process of manufacture is precisely that of the brown wasp,—in tiers inside, arranged one above the other, with the heavy paper covering around the outside, usually top-shaped. The paper hornet is an insect very abundant in the Eastern United States.

Early in the spring the female wasp (queen) crawls out of her winter hiding-place. She immediately gathers some wood scrapings from some tree, post or log, and builds a single six-sided cell. In it she lays one egg. She proceeds to add more cells and to lay more eggs until the eggs start hatching. Then she collects insects or honey to feed the newly-hatched wasps (larvae). As soon as the young are old enough to leave the nest they do a strange thing. Instead of sailing forth into the world to have a "career" of their own, as do flies or grasshoppers, they stay with the nest, gathering food for the other newly-hatched wasps, and bringing new wood pulp to enlarge the nest.

In this way a large colony of wasps may be built up during a summer. The nests are often a foot or more in diameter. I have several here in my study which are nearly two feet in diameter. The paper from which they are built being manufactured from wood pulp, is very durable, strong and tough. A nest, if kept in a dry place indoors, will last for ages and show no sign of breaking down.

It is not uncommon to see these large, gray paper-bags hanging from the trees in nearly any part of the world. They are most abundant in warm climates. Sometimes these nests are built in the tallest trees in the forest, and sometimes in a vine or shrub not five feet above the ground. Occasionally two or more are found in the same tree. In New England, wasps often build in the stone walls surrounding farm fields, or under fence-rails, and elsewhere.

Near the end of the summer, some of the baby wasps are fed very rich food, and they develop into new queens (females) and drones (males). Those wasps hatched earlier in the season were females also, but were not developed sufficiently to lay eggs. The new queens and drones immediately leave the nest and mate in the air. The drone then dies, and the queen finds a hiding place where she may spend the winter in safety. She never returns to the old nest.

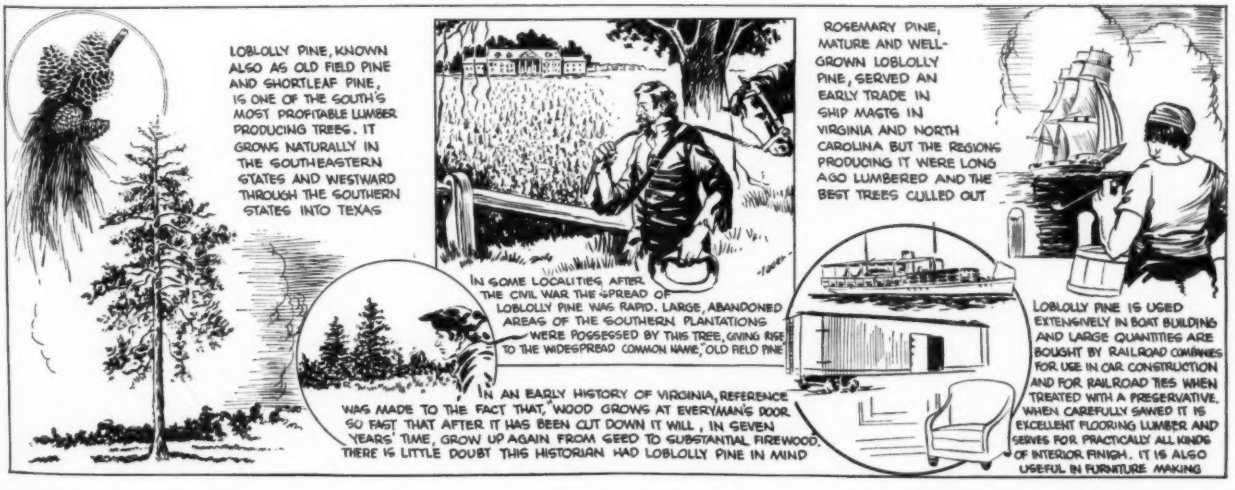
After the queens and drones all have left the nest, the other wasps (workers) also leave the nest and die when frosts come. Only the queens live through the winter. They can be found sometimes under leaves during the winter. After the first heavy frosts have come, the nests can be approached safely, for they are quite sure to be abandoned. They will never be occupied again, for the queens will build new ones when they emerge the following spring.

Wasps do not store any food. Some honey is made for feeding the young wasps, but it is never stored in the nest. They seem to live only for the pure joy of living, reminding us of the words of Burroughs, "the game of life itself is worth all the trouble and pain it takes to play it." They work all summer building a nest which they will never live in; yet the fullness of life comes to them while doing it.

Insects, as well as animals, often have to face many of the same problems as man. Living on the same earth, they are subject to the same laws, dangers and necessities. And they have preceded man in solving many problems,—from them he has learned much.

TREES AND THEIR USES

No. 4 - - - LOBLOLLY PINE


LOBLOLLY PINE, KNOWN ALSO AS OLD FIELD PINE AND SHORTLEAF PINE, IS ONE OF THE SOUTH'S MOST PROFITABLE LUMBER PRODUCING TREES. IT GROWS NATURALLY IN THE SOUTHEASTERN STATES AND WESTWARD THROUGH THE SOUTHERN STATES INTO TEXAS
IN SOME LOCALITIES AFTER THE CIVIL WAR THE SPREAD OF LOBLOLLY PINE WAS RAPID. LARGE, ABANDONED AREAS OF THE SOUTHERN PLANTATIONS WERE POSSESSED BY THIS TREE, GIVING RISE TO THE WIDESPREAD COMMON NAME, "OLD FIELD PINE"
IN AN EARLY HISTORY OF VIRGINIA, REFERENCE WAS MADE TO THE FACT THAT, "WOOD GROWS AT EVERYMAN'S DOOR SO FAST THAT AFTER IT HAS BEEN CUT DOWN IT WILL, IN SEVEN YEARS' TIME, GROW UP AGAIN FROM SEED TO SUBSTANTIAL FIREWOOD." THERE IS LITTLE DOUBT THIS HISTORIAN HAD LOBLOLLY PINE IN MIND
ROSEMARY PINE, MATURE AND WELL-GROWN LOBLOLLY PINE, SERVED AN EARLY TRADE IN SHIP MASTS IN VIRGINIA AND NORTH CAROLINA BUT THE REGIONS PRODUCING IT WERE LONG AGO LUMBERED AND THE BEST TREES CULLED OUT
LOBLOLLY PINE IS USED EXTENSIVELY IN BOAT BUILDING AND LARGE QUANTITIES ARE BOUGHT BY RAILROAD COMPANIES FOR USE IN CAR CONSTRUCTION AND FOR RAILROAD TIES WHEN TREATED WITH A PRESERVATIVE. WHEN CAREFULLY SAWED IT IS EXCELLENT FLOORING LUMBER AND SERVES FOR PRACTICALLY ALL KINDS OF INTERIOR FINISH. IT IS ALSO USEFUL IN FURNITURE MAKING

AROUND THE STATES WITH THE AMERICAN FORESTRY ASSOCIATION

Heintzleman Heads New N.R.A. Office for Conservation

B. F. Heintzleman, who for the past year has represented the Forest Service in its cooperative relations to the conservation section of the Lumber Code, has been appointed Deputy Administrator for Forest Conservation, a new office recently created by the National Recovery Administration. Mr. Heintzleman assumed his new duties on March 1. He is a graduate of the Mt. Alto School of Forestry and the Yale Forest School and has had long forestry experience in the Forest Service in the Pacific Northwest and in Alaska.

The National Recovery Administration has established the new office to deal expressly with forest conservation on private timber lands under the lumber and other codes relating to the forest industries. The purpose of the new office is to place in a properly qualified public official responsibility for seeing that the Code agencies meet the Code commitments relative to the practice of forestry. It will provide close public direction to the formulation of new forestry policies and rules and to the administration of forestry activities by the several Code agencies. A further purpose of the new office is to promote effective participation by all public forest agencies in the joint private and public undertaking of keeping private forest lands in a permanently productive condition.

A cooperative agreement, it is said, is being arranged by the National Recovery Administration and the Department of Agriculture whereby at the request of the Deputy the Forest Service will function as an adviser, and its organization throughout the United States will conduct studies of technical problems and inspect results being obtained under the forest rules of the codes. Members of the administrative and research divisions of the Forest Service will continue, as at present, to serve as advisory members of the Code.

As Deputy, Mr. Heintzleman will likewise promote cooperative programs of educational work among small forest land owners designed to aid them in the carrying out of the forestry practices required by their Code. As a further measure to strengthen the conservation effort under N.R.A., he has indicated that he expects to give early consideration to the possibility of incorporating in the codes of all forest industries appropriate conservation requirements.

Parkways Committee Appointed

The appointment of an advisory committee to the National Park Service on state and local parkways has been announced by the Secretary of the Interior.

The committee, which will assist the Department in planning state and local parks, is headed by Colonel Richard Lieber, of Indianapolis, president, National Conference on State Parks. Other members are: Miss Harlean James, of Washington, executive secretary of the American Civic Association; Horace M. Albright, of New York, former director of the National Park Service; Tom Wallace, editor of the *Louisville Times;* and Harland Bartholomew, city planner for St. Louis, Missouri.

C.C.C. Ordered to Prepare for New Period

Although Congress up to the time of going to press had not enacted legislation continuing the Civilian Conservation Corps, camps and corps areas throughout the country have been ordered to "prepare immediately" for the enrollment on March 31, when the present period ends, of 380,000 young men, war veterans and Indians, and to "stand by" in full preparedness to handle up to 600,000 men. Work plans for this number over a period of two years have already been completed.

The "prepare immediately" order does not call for an increase in the number of camps, it was said, but the "stand by" order involves additional camps up to a total of 3,000. This is in line with the President's expressed wish to double the strength of the C.C.C. About $600,000,000 will be needed to do this.

B. F. Heintzleman.

Ickes Seeks International Park

Establishment of an international park on the United States-Mexican boundary has been recommended to President Roosevelt by Secretary of the Interior Harold L. Ickes.

The recommendation was made in connection with a report from the Department of the Interior upon the advisability of including in a National Park the Big Bend area of southwestern Texas, a triangular area of approximately 5,500 square miles in extent enclosed by the big bend of the Rio Grande.

In recommending that the Big Bend National Park be established, the Secretary also suggests that if Congress authorizes this park, the Mexican Government be invited to cooperate by establishing a park on the Mexican side, the two to form an international peace park.

Precedent for such a park already exists on the nation's northern boundary. In 1932, following action by the Canadian Parliament and the Congress of the United States, the Waterton Lakes-Glacier International Peace Park was established, to include Canada's Waterton Lakes Park and the Glacier National Park, in Montana. The two areas function separately, their administration financed by funds from their respective governments; but from the standpoint of recreation the two parks form one great mountain area wherein the peoples of the two countries meet and relax, cementing the century and more of peace between them.

A similar plan is contemplated for the project park on the Mexican border.

The Big Bend area is included in the last wilderness of Texas. It is a semi-arid plain, verging on desert, through which a group of mountain ranges, principally the Chisos, has been thrust. These are the southernmost spur of the Rocky Mountains. Of these, the Chisos Range "Phantom," the highest and most rugged, attaining an altitude of 7,835 feet, is literally a biological island.

The varied forest cover in the Chisos is still virgin. Large mammals, such as deer, bear, panther, and fox still survive. The vegetation of the surrounding semi-arid plains is principally a growth of chaparral and cactus. The forest cover in the higher levels of the Chisos, however, is extensively varied with Douglas spruce, pine, junipers, oaks and hackberry well represented.

One of the dramatic features in this area is the Rio-Grande itself, which, in its tortuous course, cuts through three steep-walled canyons, the Santa Helena, the Mariscal and the Boquillas, and meanders over flat river plains between.

Association Honors Fechner

In recognition of his public service in directing the Civilian Conservation Corps, Robert Fechner, director of Emergency Conservation Work, was honored by The American Forestry Association at a testimonial dinner at Washington on March 22.

Honored at the same time was Mr. Fechner's advisory council, composed of F. A. Silcox, chief, United States Forest Service; W. Frank Persons, director, United States Employment Service, Department of Labor; Colonel Duncan K. Major, Jr., of the Army's general staff; and Arno B. Cammerer, director, National Park Service.

Undersecretary of Agriculture Rexford G. Tugwell and Senator David I. Walsh, of Massachusetts, were the main speakers. Henry Solon Graves, president of The American Forestry Association, served as toastmaster.

Among other features of the dinner was the first showing of the Army's new sound film depicting the history of the C.C.C., and the reading of the poem "The Forest Corps," the C.C.C.'s outstanding literary effort, by Arthur Godfrey, noted radio announcer.

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GRAZING ADMINISTRATION URGED TO PROTECT WILDLIFE ON PUBLIC DOMAIN

In the application of the Taylor Grazing Act to the Public Domain, adequate provision for the protection of vanishing herds of wildlife, such as antelope and mountain sheep, is being vigorously demanded by the Biological Survey and various national wildlife organizations. The question came to the fore in Washington early in March when Representative Ayres of Montana questioned Secretary Ickes during a hearing before the House Committee on Public Lands as to what plans the Department is making in respect to wildlife protection on some fifteen or twenty areas of the Public Domain which are hereditary ranges of certain species of wildlife. These areas aggregate several million acres and adequate wildlife protection is needed, it is contended, if the species are to be preserved. Since the hearings the question has been the subject of several conferences by representatives of the Biological Survey and the Department of the Interior designed to work out an adequate plan of coordinating wildlife protection with the grazing administration of the Public Domain.

Secretary Ickes expressed to the Public Lands Committee his deep personal interest in all matters relating to conservation and suggested the possibility that Congress might consider the inclusion within the act of phraseology that would give limited numbers of wildlife prior rights to the range. In certain areas, the Secretary said, dedication to wildlife may be the best use. No promise was made, however, that any of the areas described by the Biological Survey as hereditary breeding and feeding grounds of certain vanishing species of wildlife would be established and withdrawn from general use before the grazing districts are established. Jay N. Darling, Chief of the Biological Survey, is insisting that wildlife be given its rightful place in the administration of the Public Domain. Many animals and birds once plentiful in the West he declares are now pushed back to their last stand on the public domain and they must be saved from extinction. Unless the grazing of domestic livestock on these areas is made secondary to the welfare of the wildlife the latter will be exterminated.

Plans for dividing the Public Domain into fifty grazing districts with large responsibilities to be placed upon committees of local grazing users were described to the House Subcommittee on Interior Department Appropriations by responsible departmental officials on January 26. At the same time it was announced that during the first year of preparatory development under the Taylor Grazing Act no fees will be charged. Subsequently, on March 5 Secretary Harold L. Ickes and Assistant Solicitor Rufus G. Poole explained to the House Committee on Public Lands that with only 80,000,000 acres available no more than fifty-one grazing districts could be created. Accordingly, the committee was urged to report favorably on H. R. 3019 proposing to strike out this limiting factor and to extend the law to the entire Public Domain of 176,000,000 acres.

Each district grazing committee will consist of seven sheepmen and seven cattlemen chosen by the permittees of the district, who will work with an official of the Division of Grazing Control. They will meet as necessary during the year to approve all grazing permits and make recommendations regarding range improvements, fees and administration. Each committee member will receive $5.00 a day and travel expenses when actually employed in attending meetings. To meet expenses for the 1,260 members of the ninety committees contemplated for administering the grazing on the entire Public Domain a total of $96,500 has been included in the Appropriation Bill.

To assist Director Carpenter of the Division of Grazing Control, about 1,500 men familiar with western grazing conditions took Civil Service examinations preparatory to the appointment of five assistant directors at $5,600 and fifteen grazers at $3,200. Examinations were closed on January 30, 1935. Headquarters will probably be in Utah with an Assistant Director in charge of the Washington office in the Department of the Interior. Complete plans, including the location of each of the several grazing districts and provisions giving adequate protection for wildlife will be announced early in April.

NEW NATIONAL FOREST PURCHASES AUTHORIZED

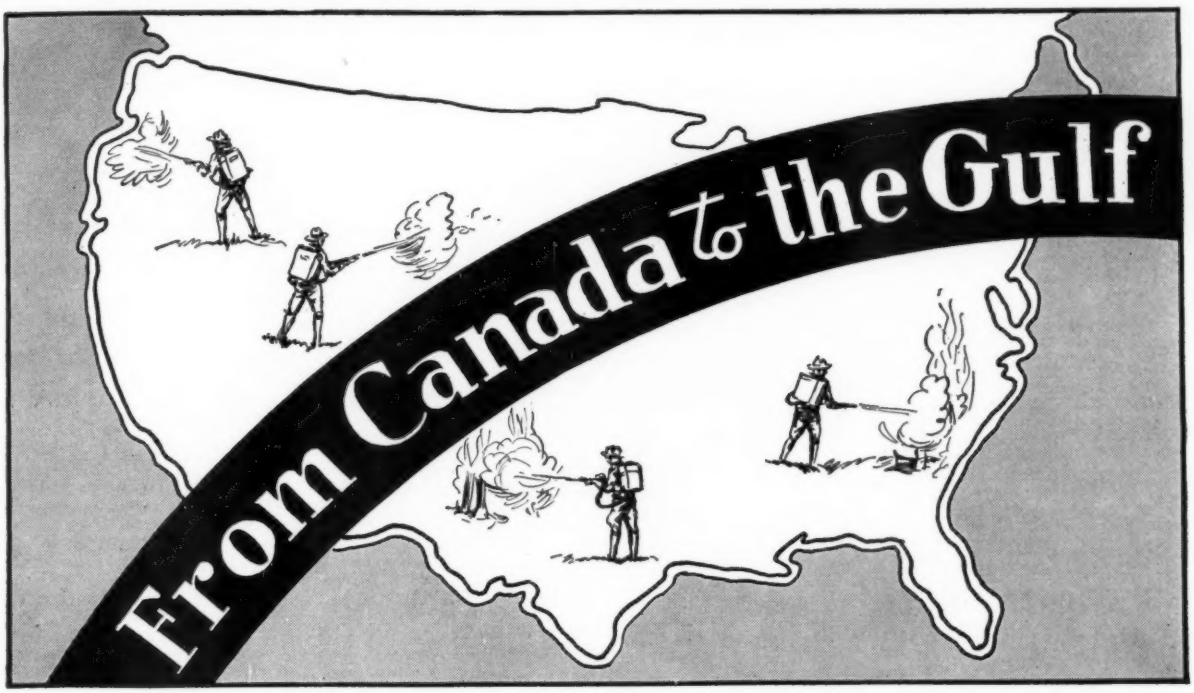
At two meetings of the National Forest Reservation Commission on February 28 and March 7 purchase of 310,731 acres, exchanges of 68,000 acres of forest lands within the State of Michigan, creation of three new forest units and major increases in the area of four existing purchase units were approved for additions to the National Forests. Culminating these actions of the Commission was the tentative approval of the purchase of four tracts aggregating 320 acres on the floor of the Kings River Canyon in the Sequoia National Forest in California. This will be the first purchase of forest land west of the Great Plains to be approved by the Commission. Tentative approval was also given to two small tracts in the Natural Bridge National Forest in Virginia whose purchase is desired to protect public interests along the Shenandoah-Smoky Mountains National Parkway. Most of the land involved in the purchases and exchanges is cutover forest in need of sustained yield forest management. As soon as individual purchases arranged for by the United States Forest Service are completed, forest officers will take charge and put forest management and protection measures into effect.

The new purchase units authorized are the Delta National Forest Purchase Unit in Mississippi, and two units in North Dakota,—one in the north central part of the state and the other to the southeast at the headwaters of the Red River. Additions to the Ouachita National Forest in Arkansas, the Manistee in Michigan, the Ocala in Florida and the Leaf River in Mississippi were authorized.

Under an agreement between the United States Forest Service and the State of Michigan approved by the Commission in 1934 for the purpose of consolidating the respective National Forests and State Forests, State lands within the Manistee, Hiawatha and Marquette National Forests were exchanged for Federal lands of comparable value located outside of the adjusted boundaries of these forests. Under the terms of these exchanges the Federal Government received 36,309 acres of land previously in State ownership, in exchange for 31,743 acres, which now becomes a part of the adjoining State Forests.

The Commission approved changing the name of the Wapello National Forest purchase unit, in southern Iowa, to the Chequest. This unit, established January 21, lies in Appanoose, Monroe, Davis, Van Buren and Wapello counties. The change was made in part to avoid confusion with the previously named Wappapello unit in Missouri.

The Commission approved a proposal that a portion of the Leaf River National Forest Purchase Unit, in Mississippi, be taken over



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by the State for the use of the National Guard, upon payment by the State of the money spent in acquiring the lands, as authorized by Congress on March 2 by the passage of H. R. 4983.

Purchases approved in February include 1,140 acres in New England, 56,745 acres in the Appalachian region, 107,867 in the Southern pine region, 38,174 in the Ozark and Mississippi regions, and 105,727 in the Lake States, also 1,079 acres in Puerto Rico.

In the Appalachian region 31,941 acres were purchased in the Monongahela and George Washington National Forests, in Virginia and West Virginia, and 12,281 in the new Cumberland National Forest, in Kentucky. In the Ozark-Mississippi region, 22,000 acres were approved in Missouri, 8,000 in Arkansas and Oklahoma and 6,000 in Illinois.

In the Southern pine region purchases were largest in the Ocala National Forest, in Florida, where acquisition of 24,200 acres was approved, and in the San Jacinto unit, in Texas, 23,801 acres. About 25,000 acres were approved for purchase in the new Wambaw, Enoree, and Long Cane units in South Carolina.

Heaviest purchases in the Lake States were 18,727 acres in the Manistee unit in the lower peninsula of Michigan, and 14,822 acres in the Hiawatha unit in the upper peninsula.

No consideration was given to the establishment of one or more forest purchase units in the redwood area of northwestern California.

AWARDS MADE IN ASSOCIATION'S SECOND ANNUAL PHOTOGRAPHIC COMPETITION

A dramatic desert study, "Wild Palms," the photographic work of Loyd Cooper, of Claremont, California, and made in the Colorado Desert of California, received the first national award in The American Forestry Association's Second Annual Competition for "Beautiful Photographs of Trees in America." The frontispiece of this issue reproduces the winning picture.

Mr. Cooper received a cash award of $100 and an Association Certificate Award of Excellence. He also received the California State Certificate awarded by the Association.

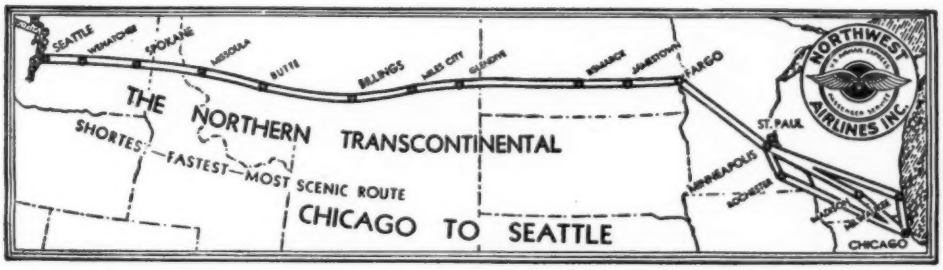
Second prize of $50 was awarded to Ernest Williams, of South Pasadena, California, for his "Smoke Tree," a California subject. Mr. Williams was also awarded first, fourth and seventh Honorable Mention prizes. Third prize of $25 want to Theodore M. Wurts, of East Orange, New Jersey, for his "Rippling Shadows," a New Jersey subject. Second Honorable Mention was awarded to Ray Atkeson, of Portland, Oregon, for his subject "After the Storm," while third Honorable Mention went to C. P. Stallknecht, of South Orange, New Jersey, for his "Wind Bent." Thomas O. Sheckell, of East Orange, New Jersey, winner of the 1933 Competition, won fifth Honorable Mention award with his "Blossoms of Spring," and Ernest Crandall, of Takoma Park, D. C., was given sixth position with "Ghost Trees." Cash prizes of $10 and Certificate Awards of Excellence were given the first five Honorable Mention awards.

The winning photographs, both national and state, together with several hundred of the most outstanding subjects entered in the Competition, will be exhibited at the National Museum, Washington, until April 1. Following that the pictures will be exhibited throughout the country.

The Competition, the second sponsored by the Association, was designed to stimulate interest in the beauty of trees in the American landscape and to encourage photography as a medium of greater public appreciation of their beauty and service. The Competition was conducted on the basis of national and state awards.

The Jury of Awards included Miss Frances B. Johnston, Arts Club of Washington; Dr. L. B. Holland, Chief, Division of Fine Arts, Library of Congress; F. A. Whiting, Jr., Editor, *American Magazine of Art;* Dr. Harold C. Bryant, National Park Service; and Ovid Butler, Editor, AMERICAN FORESTS.

State Awards were as follows: Arizona, "Beautiful in Death" by Ernest Crandall, 6611 Harlan Place, Takoma Park, D. C.; California, "Wild Palms" by Loyd Cooper, 224 Yale Avenue, Claremont, California: Colorado, "Lookout Pine" by Katherine Matthies, 78 West Street, Seymour, Connecticut; Connecticut, "Snow Lights" by R. H. Fenton, Spring Hill, Connecticut; District of Columbia, "River Trees" by Mrs. Bessie W. Gahn, 4120 Fourteenth Street, Northwest, Washington, D. C.; Florida, "Palm in Moonlight" by Ernest Crandall, 6611 Harlan Place, Takoma Park, D. C.; Georgia, "Wormsloe Gardens" by Mrs. Bayard Wootten, Chapel Hill, North Carolina; Illinois, "Trees in Summer" by Robert H. Lysle, 4253 North Hermitage Avenue, Chicago; Indiana, "Patriarch of the Forest" by Cammack's Studio, Greencastle, Indiana; Kentucky, "Facing the Sunrise" by Joseph Baldorff, 15 Mercer Street, Cincinnati, Ohio; Maine, "Four Trees" by Ernest L. Gould, Orange Camera Club, East Orange, New Jersey; Maryland, "Under the Beech" by Ethan A. Andrews, Jr., 47 East Lake Avenue, Govans, Baltimore, Maryland; Massachusetts, "Winter Willow" by Harold Orne, Melrose, Massachusetts; Michigan, "Sentinels" by Norton Louis Avery, West Willow Road, Lansing, Michigan; Mississippi, "Moss-Draped" by Mary Ethel Dismukes, Biloxi, Mississippi; Montana, "Calm Between the Storms" by Winton Weydemeyer, Fortine, Montana; Nevada, "Golden Aspens" by Mrs. Dorothy W. Allen, 320 Hill Street, Reno, Nevada; New Hampshire, "Forest Vista" by Harold Orne, Melrose, Massachusetts; New Jersey, "Rippling Shadows" by Theodore M. Wurts, 1 Prospect Terrace, East Orange, New Jersey; New Mexico, "Taos Lanscape" by Sophia L. Lauffer, 320 Eighth Avenue, Brooklyn, New York; New York, "Wind Bent" by C. P. Stallknecht, 52 Montrose Avenue, South Orange, New Jersey; North Carolina "A Sentinel of Tryon" by Mrs. Bayard Wootten, Chapel Hill, North Carolina; Ohio, "Daybreak" by Joseph Baldorff, 15 Mercer Street, Cincinnati, Ohio; Oregon, "After the Storm" by Ray Atkeson, 630 N. E. 20th Avenue, Portland, Oregon; Pennsylvania, "Our Beech" by Bert McFeely, Lansdowne, Pennsylvania; South Carolina, "Live Oak" by Mabel Hyde, 243 West End Avenue, New York, N. Y.; South Dakota, "Aspen Thicket" by Mrs. Lybrook Simmons, The Carleton, Oak Park, Illinois; Tennessee, "Cathedral Spires" by Carlos C. Campbell, Box 822, Knoxville, Tennessee; Utah, "Autumn's Artistry" by Ray Atkeson, 630 N. E. Avenue, Portland, Oregon; Vermont, "White Sisters" by Theodore M. Wurts, 1 Prospect Terrace, East Orange, New Jersey; Virginia, "Trees Against the Sunset Sky" by William Edwin Booth, 613 Roseneath Road, Richmond, Virginia; Washington, "Forests of Fir" by C. A. Musgrave, 2702 Franklin Avenue, Seattle, Washington; West Virginia, "Sunlight Through the Willows" by W. Dovel LeSage, Box 472, Huntington, West Virginia; Wisconsin, "Autumn Beeches" by Florence C. Burnell, Hudson, Iowa; Wyoming, "Douglas Firs" by Mary E. Wild, 1436 Ogden Street, N. W., Washington, D. C.



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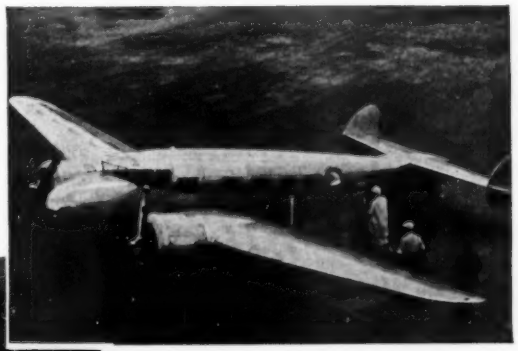

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Conservation Calendar in Congress

Published monthly while Congress is in session as a service to the members of The American Forestry Association. This calendar contains bills introduced in the First Session of the Seventy-fourth Congress between February 10 and March 18, as well as any action taken on bills previously listed.

BILLS APPROVED

H. R. 4983—COLMER—Transfer of forest reservation lands in Forrest and Perry Counties, Mississippi, to State of Mississippi. Passed House February 1. Passed Senate February 21. Approved March 2. Public Law No. 16.

APPROPRIATIONS

H. J. Res. 117—BUCHANAN—Making appropriations for relief purposes. Passed House January 24. Senate Report 109. February 14.

H. R. 6223—TAYLOR of Colorado—Appropriations for the Department of the Interior. Report 249. February 27. Passed House March 4.

H. Doc. 98—PRESIDENT ROOSEVELT'S supplemental estimate of appropriations for Department of Agriculture, Forest Service, 1935. To Appropriations February 14.

H. R. 5255—OLIVER—Appropriations for the Department of Commerce. Passed House February 8. Passed Senate February 25. Submitted to President for Signature, March 18.

H. R. 6644—BUCHANAN—Deficiency appropriations for year ending June 30, 1935. Passed House March 13.

H. R. 6718—SANDLIN—Appropriations for the Department of Agriculture. Passed House March 15.

NATIONAL FORESTS

H. R. 6034—WERNER—(S. 463—MCNARY) Facilitating use and occupance of National Forest lands for residence, recreation, etc. To Agriculture February 20.

H. R. 2881—BUCK—(H. R. 2873—WHITE) (S. 424—POPE) Authorizing the adjustment of existing contracts for sale of timber on National Forests. Report 154. Passed House March 4.

H. R. 6544—STUBBS—To conserve the water resources and to encourage reforestation of watersheds of Santa Barbara County, California, from location and entry under mining laws. To Public Lands March 8.

NATIONAL PARKS

S. Doc. 20—Yellowstone River compact between the States of Wyoming and Montana. To Irrigation and Reclamation, February 18.

S. 2074—BYRD—To create a National Park Trust Fund Board. To Public Lands and Surveys February 28.

H. R. 6147—DEROUEN—Authorizing the acquisition of permanent rights in land for the protection of National Parks and National Monuments from scenic impairment. To Public Lands February 25.

S. 1876—MCNARY—Accepting the cession by Oregon of exclusive jurisdiction over land embraced within Crater Lake National Park. To Agriculture and Forestry February 15.

S. 1797—MCKELLAR—Providing for acquisition of Andrew Johnson Homestead, Greeneville, Tennessee, as a national shrine. To Library February 11.

S. 1986—STEIWER—Authorizing appropriation of $1,000 for acquisition of photographic studio, furniture and equipment from Kizer's, Inc., in Crater Lake National Park. To Public Lands and Surveys February 25.

H. R. 6373—THOMASON—(S. 2131—CONNALLY, SHEPPARD) Providing for establishment of Big Bend National Park in Texas. To Public Lands March 4.

S. 2289—JOHNSON—To establish King Canyon National Park, California, and include lands now in General Grant National Park. To Public Lands and Surveys, March 18.

WILDLIFE

H. R. 6244—CLARK of Idaho—Establishing a game management supply depot and laboratory. To Agriculture February 27.

H. R. 5613—WALTER—To establish a fish-cultural station at Hamilton Township, Pennsylvania. To Merchant Marine, Radio and Fisheries February 12.

S. 1983—STEIWER—That the Secretary of Agriculture shall pay to each county in Oregon in which the United States owns land an amount equal to all taxes that would have been collectible had such land been in private ownership and taxable. To Agriculture and Forestry February 25.

H. R. 6194—GILCHRIST—Conveying to Iowa certain lands within nonnavigable meandered lake beds within that State for use as public parks, recreation grounds and game refuges. To Public Lands February 26.

FLOOD CONTROL

H. R. 6233—ROGERS of New Hampshire—Flood control, preservation of wildlife, etc., on Merrimack River. To Flood Control February 27.

S. 2135—NORRIS—(H. R. 6364—RANKIN) (H. R. 6284—RANKIN) (S. 2095—NORRIS) Flood control of Tennessee River, reforestation of Tennessee Valley, etc. To Agriculture and Forestry March 4.

H. R. 6455—FERGUSON—Providing for control of flood waters in the United States by creating a permanent Soil Erosion Service. To Flood Control March 6.

H. R. 6126—Flood control of Columbia River, reforestation of Columbia River Basin, etc. To Irrigation and Reclamation February 22.

S. Res. 94—GORE—Report on efforts heretofore made to control soil erosion. Introduced March 6.

S. 2092—CONNALLY—(H. R. 6122—JOHNSON of Texas) (H. R. 6198—JOHNSON of Texas) Control of flood waters of Brazos River, etc., in Texas. To Commerce February 28.

H. R. 5807—WALLGREN—Promoting general welfare of United States in plan for flood control on rivers in Washington, soil erosion control, etc. To Flood Control February 15.

H. R. 5712—FERGUSON—Prevention of soil erosion, flood control, etc., in all areas drained by Arkansas River and its tributaries. To Flood Control February 14.

H. R. 6319—NICHOLS—(S. 2207—GORE)—Creating a separate division in Department of Agriculture to be known as "Soil Erosion Service." To Agriculture March 1.

H. R. 6432—NICHOLS—Creating a separate division in the Department of the Interior known as "Soil Erosion Service." To Public Lands March 5.

S. 2149—HAYDEN, COSTIGAN, HATCH—To provide for protection of land resources against soil erosion. To Public Lands and Surveys March 4.

Ayres Awarded Pugsley Medal

Philip W. Ayres, forester, Society for the Protection of New Hampshire Forests, has been awarded the Bronze Pugsley Medal for 1935. According to the Scenic and Historic Preservation Society, Mr. Ayres was honored because of his outstanding contribution to the development of parks.

The Gold Pugsley Medal for 1935 was awarded to Major W. A. Welch, general manager and chief engineer of the Palisades Interstate Park in New York and New Jersey, and the Silver Medal was awarded to William E. Carson, former director of the Virginia Department of Conservation and Development. The medals are awarded under a foundation established in 1929 by Chester DeWitt Pugsley, of Peekskill, a trustee of the Society, in honor of his father, Honorable Cornelius Amory Pugsley.

Mr. Ayres has been forester of the Society for the Protection of New Hampshire Forests since 1900, during which time he has acquired and developed by private contributions many important scenic features in New Hampshire, including Mount Monadnock, Mount Sunapee, Mt. Kearsarge, Mount Cardigan, the Flume in Franconia Notch, and Lost River in Kinsman Notch.

Mr. Ayres was the first to suggest the establishment of a National Forest in the White Mountains. His Society was largely instrumental in acquiring in public ownership the four great notches in the White Mountains—Crawford, Franconia, Pinkham and Kinsman. The Society has also influenced the State forest policy of New Hampshire, whereby it now has 30,000 acres in state forests, 125 forest strips adjoining highways, and more than 200 forest reservations. More than $8,000,000 in federal, state and private funds have been expended in New Hampshire for forest land purchases.

Mr. Ayres was born in Winterset, Iowa, in 1861, and holds degrees from Johns Hopkins and Cornell Universities, and an honorary degree from the University of New Hampshire.

Central Forestry Congress

The 1935 meeting of the Central States Forestry Congress will be held June 19, 20, and 21, at Houghton Lake, Roscommon County, Michigan, it has been announced. At the same time it was stated that P. J. Hoffmaster, director of the Michigan State Department of Conservation, has been elected to replace L. R. Schoenmann on the Executive Committee for the Congress. Mr. Hoffmaster was also elected as a member of the State Board of Directors, along with Sidney D. Waldon, of Detroit, president of the 1935 Congress, and G. S. McIntire, of Lansing.

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Roads through National Parks must be "a part of the picture." An ordinarily good highway job isn't good enough. To get the approval of public and park commissioners the park road must blend with nature. No unsightly grades, cuts or embankments are permitted to mar the beauty of woods or mountains. Scattered rock fragments cannot be tolerated.

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QUESTION: What portion of the Public Domain is unsurveyed?—J. G. S., Nevada.

ANSWER: The remaining unsurveyed land within the United States is 133,562,166 acres, according to figures from the General Land Office of the Department of the Interior, while in Alaska 376,174,242 acres are unsurveyed.

QUESTION: Please advise me why dogwood blossoms growing on my estate are not pure white but almost green as the leaves.—J. D. M., South Carolina.

ANSWER: The white bracts that make up the showy part of dogwood flowers are green in color when they first begin to expand, but they later turn to a pure white or sometimes a pink color. Dr. Frederick V. Coville, Chief Botanist of the United States Department of Agriculture, says he has never known these bracts to remain green until maturity, and suggests that if the green persists fresh specimens be sent to the Bureau of Plant Industry of the Department of Agriculture where one of the pathologists may examine them to see whether a fungus is the cause of the abnormality.

QUESTION: What are the hardest American softwood and hardwood lumbers?—N. C. B., New York.

ANSWER: Pacific yew (*Taxus brevifolia*) is 110 per cent as hard as white oak and is the hardest softwood. Longleaf pine (*Pinus palustris*) is sixty-three per cent as hard and is the next hardest softwood. Similarly, osage orange (*Toxylon pomiferum*) is 194 per cent as hard as white oak and is therefore the hardest American hardwood. Honey locust (*Gleditsia triacanthus*) scores 176 per cent and is second hardest.

QUESTION: How many acres of forests are in the United States and what portion of this is under the care of the Government or different States?—J. R. J., Florida.

ANSWER: There are 614,558,000 acres of forest and woodland in the United States of which 494,898,000 acres are considered of commercial value. Of these forest areas 88,027,000 acres are administered by the Government within National Forests, Indian reservations, National Parks, etc., while 10,632,000 acres are owned and administered by states, counties and municipalities. Of the remaining 396,239,000 acres in private ownership 126,723,000 acres are classified as farm woods.

QUESTION: What state has the most land in forests and what is the forest acreage?—R. S. R., Washington.

ANSWER: Oregon with 23,275,000 acres of forest land is the largest forest state in the Union. The total land area of Oregon is 61,188,480 acres.

Colorado Seeks Shelterbelt

Extension of the Prairie Shelterbelt to include Colorado was recommended in a resolution adopted at the annual meeting of the Colorado Forestry Association on February 8. The resolution further recommended that five belts of trees be planted from points near the front range east of the Colorado line.

The association went on record in support of the establishment of a forest research station for the study of forests, range, and other related problems of the forests of the central Rocky Mountain region. It was pointed out that this region is the only one of twelve forest regions of the United States which has no well developed forest research station.

The following association officers and directors were elected: Mrs. Clarence M. Richards, president; W. J. Thomson, vice-president; Perry L. Clarke, secretary-treasurer; and John H. Gabriel, W. J. Morrill, C. R. Root, Fred R. Johnson, Adam Kohankie and Paul N. Morrow, directors.

Duke University Establishes Forestry Scholarships

Duke University, at Durham, North Carolina, has announced the establishment of graduate scholarships and fellowships in forestry, available to men who offer promise of becoming leaders in the profession.

The annual stipends of these scholarships and fellowships range from $250 to $650, the exact amount awarded to each successful applicant varying with his qualifications. Preference will be given to men who have studied French and German and who have already obtained technical or professional training as represented by a degree from a school of forestry of good standing.

Holders of scholarships and fellowships will devote their entire time for at least nine consecutive months to an approved program in forestry. These men may become candidates for the M. A. or Ph. D. degrees when they have met the requirements for admission to candidacy for these degrees, work for which is offered through the Graduate School of Arts and Sciences at the University. The major work will be in one of the following fields of concentration: forest-tree physiology, silvics, forest soils, silviculture, and forest management. This work will be closely coordinated with the research being conducted in the Duke Forest and in the University laboratories and greenhouses by the forestry, botany, and zoology staffs.

Application blanks for scholarships and fellowships may be obtained by writing to the Director, Duke Forest, Duke Station, Durham, North Carolina. Applications and transcripts of record must be filed not later than April 15.

William B. Greeley Improved

The condition of Colonel William B. Greeley, Secretary-Manager of the West Coast Lumbermen's Association, and a Director of The American Forestry Association, who was seriously injured on February 1 when struck by a motor truck in Portland, Oregon, was reported, at the time of going to press, as greatly improved. Physicians attending the former Chief of the Forest Service anticipate complete recovery.

Colonel Greeley sustained a lineal fracture of the skull and severe lacerations about the head in the accident. He had just stepped from his parked car when the truck, in making a turn at a street intersection, crashed into his automobile throwing him to the street.

New Forest Fire Hazard Recorder

The United States Forest Products Laboratory, Madison, Wisconsin, has developed a forest fuel hygrograph, indicating and recording the main factors of forest fire hazard. It has been tested in service at the Northern Rocky Mountain Forest and Range Experiment Station, Missoula, Montana. The instrument records the degree of dryness of forest leaf litter or duff and of the slash or branchwood that is left after logging, as well as average wind velocities.

Since its indications continuously translate atmospheric conditions into a direct gauge of the inflammability of forest materials, this hygrograph is welcomed by forestry officials

The part of the new instrument that detects duff moisture is a hygrometer invented about ten years ago and now first embodied in a self-recording mechanism. The wood moisture-indicating part of the new hygrograph is a direct weighing device of six wooden rods of a species representative of the forests.

Wind movement is recorded by jogs of a pen for every passage of ten miles of wind as gauged by an anemometer. The instrument was designed by M. E. Dunlap, of the Laboratory, and was built in the Laboratory shops. H. T. Gisborne, of the Northern Rocky Mountain Forest and Range Experiment Station, at whose instance the instrument was devised, conducted the service tests.

New Wood-Element Hygrostat

A sensitive and accurate hygrostat for the kiln drying of wood has been developed by W. K. Loughborough and R. C. Rietz, engineers of the United States Forest Products Laboratory, Madison, Wis. In principle the new instrument is considered potentially useful for the drying of a large class of organic materials.

Its general design consists of two slightly bowed strips of veneer 10 inches long and 1/8-inch thick, with the grain running crosswise and held in a frame.

The self-operation of the hygrometer is such as to hold the bowed strips in a virtually fixed position corresponding to the maintenance of their own moisture content constant. Thus, if the strips come initially into moisture equilibrium with a desired atmospheric condition in the kiln and the contacts are then set slightly apart, any subsequent decrease of relative humidity will cause the strips to begin to dry and shorten.

The wood-strip control element effectively maintains its own state of moisture *independently of the temperature.* If the temperature remains constant, it will maintain a constant relative humidity of atmosphere; but in case of a "runaway" temperature it will provide for the supply of enough additional moisture to keep the length of element, and consequently its moisture content, constant. In this way the moisture boundary condition of the kiln contents remains the same in spite of the increased kiln temperature. Therefore the drying stresses and resultant "checking" tendencies in the lumber are not increased by the faulty temperature control.

Camera for Foresters

Future detection and suppression of fires in the Wenatchee National Forest in the State of Washington will be simplified and aided through the use of 360-degree panoramic views taken recently from each of the fifty lookout stations in the forest by federal photographers with five special cameras.

Three panoramas, put together, complete the mountainous view that encircles each lookout station, and through the use of special color filters and films, these photographs, in some cases, show more of the distant topography than the naked eye of the lookout can discern.

The photographs offer an angular system of referencing all the country to true north, and also provide a "land-level" line which establishes the elevation of all peaks and ridges having the same elevation as that of the lookout from which the photograph was taken. In case of a fire reported by any lookout, rangers below can refer to the photographs of that station and immediately establish the location of the fire and see an actual reproduction of the topography that must be covered to suppress the blaze.

Firemen will be supplied with these views and will have a clear idea of where they are going, thus saving valuable time. The photographs also will be used to translate into map form the ridges and creeks seen from the lookout peaks in the forest; these pictures also will be useful in planning and checking the efficiency of the lookout organization, for they reveal what areas are "undercovered."

The panoramic cameramen battled atmospheric disturbances for a month to obtain their views, for smoke drifting in from Canadian forests, snow and rain storms, and blizzards hindered operations from time to time.

Ventilated Fire Pump Tank

Some of the foremost authorities on forest, brush, grass and grain field fire fighting have combined their ideas in bringing about the new Indian Ventilated Fire Pump Tank. Such a tank allows constant circulation of air between the tank and the carrier's back, thus protecting the back from cold water and moisture. This feature is highly desirable for the personal safety of Federal and State employees working on fire suppression activities inasmuch as a great deal of their work is undertaken both day and night in widely varying temperatures and seasons.

Further information concerning any of the above products will be supplied in your self addressed stamped envelope mailed to American Forests, 1711 K Street, N. W., Washington, D. C.

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A Rare Find

Two small boys were walking in the woods, seeking for adventure and what they might find. One picked up a chestnut burr.

"Tommy," he called excitedly, "come here quick. I've found a porcupine egg!"

Frightening

"Lady," said Mike, "would you lend me a cake of soap?"

"Do you mean to tell me that you are really wanting to use some soap?"

"Sure, lady. Me pardner's got de hiccups, an' I want to scare him."

Just A Correction

A weary telegraph agent stationed many miles from nowhere in the Sudan, Africa, in the hottest part of summer wired his superior officer: "Please relieve me, can't stay here, am surrounded by lions, elephants, and wolves." The officer heartlessly wired back: "There are no wolves in the Sudan." Whereupon the weary one replied: "Referring to my wire of yesterday, cancel wolves."

Nice Family

Professor: "Now this plant belongs to the begonia family."

Visitor: "Ah, yes, and you're looking after it for them while they're away on holiday."

Willie's Excuse

Willie's little sister came to the schoolroom door and handed the following note in to the teacher: "Teacher, please excuse Willie—he caught a skunk."

Good Chance for Advancement

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Mother's Help

We Clean Your Dirty Kids for a quarter.
—*Elmira (N. Y.) Advertiser.*

Advertising Chop Suey

T. E. Dooley, chief storekeeper of the U.S.S. *Gold Star*, with station at Guam, sends us an advertising card which he picked up while ashore in Chinwantao some months ago. It reads:

Fung Yuan Tai Cof'e. Dinner, drink, smoke, confectionery and all kinds of food are good and cheaply. The rooms are clean and broadly. The servants are kindly. If you come we are welcome and you will satisfy. —*Pathfinder.*

Don't Lose This Chance

A FREE PIANO LESSON to Pupils Over 85 when accompanied by parents.
—*East Moline (Ill.) paper.*

Sure Thing

The Florida Citrus Growers' Clearing-House Association has given twenty carloads of grapefruit for the treatment of influenza in northern cities. That's advertising that hits 'em in the eye. —*Florida paper.*

Mountain Floods in Utah

More destructive floods occurred near Salt Lake City, Utah, in the last twelve years than in all the preceding 20,000 years or more since ancient Lake Bonneville receded, according to the Forest Service and the Utah State Agricultural College.

Evidence shows that the flash floods of recent years are a result of deterioration of the vegetation on critical areas of the watersheds caused by overgrazing and fire, and the resultant loss of the plant litter and the more absorbent top-soil by accelerated erosion.

The western slope of the Wasatch Mountains in northern Utah, where destructive floods occurred in 1923 and 1930, afforded unusual opportunity for geological observations on the history of floods and erosion in these areas. The deltas and terraces left by ancient Lake Bonneville facilitate direct comparison of the erosion and deposition of recent years with those of former times.

The soil and vegetation established on the slopes of the watersheds ages ago and maintained through thousands of years had, until the last few decades, absorbed most of the rainfall, regulated run-off and prevented noticeable erosion, it was stated. Such natural control has now vanished due to vegetative depletion by overgrazing and fire on critical areas where the relatively bare ground now speeds run-off when torrential rains occur. Accelerated run-off accumulated to form floods which swept the mountain canyons, eroded deep channels, and produced mud flows eclipsing all previous post-Bonneville erosion and deposition.

The investigations show that although a maximum plant cover on western mountain watersheds subject to torrential rainfall may not prevent all floods, the degree of erosion and intensity of run-off are increased as the density of the plant cover decreases.

Dutch Elm Disease Quarantine

As a step toward checking the spread of the Dutch elm disease, the Secretary of Agriculture on February 21 announced a new quarantine which prohibits movement out of the regulated area in New York, New Jersey and Connecticut of all plants or parts of plants of all species of the genus *Ulmus*, whether grown in nurseries, forests, or on private property. The quarantine became effective February 25.

The areas under regulation are in Fairfield County, in Connecticut; Mercer, Middlesex and Morris Counties, in New Jersey; and Westchester County, in New York.

The quarantine applies to trees, plants, leaves, twigs, branches, bark, roots, trunks, cuttings and scions of such plants; logs or cordwood; crates, boxes, barrels, packing cases, and other containers manufactured in whole or in part from such plants, unless the wood is entirely free from bark.

Bowman Heads Johns Hopkins

The election of Dr. Isaiah Bowman as fifth President of Johns Hopkins University, at Baltimore, Maryland, was announced on February 22 by Daniel Willard, President of the Board of Trustees. Dr. Bowman will succeed Dr. Joseph S. Ames who will retire on June 30 after having been connected with the university for fifty-two years.

As Chairman of the National Research Council, Director of the American Geographical Society, instructor and assistant professor of geography at Yale University for ten years, Dr. Bowman is widely known among foresters and conservationists. He was born in Canada and has degrees from Harvard, Yale and Bowdoin Colleges. He is the author of *Forest Geography*.

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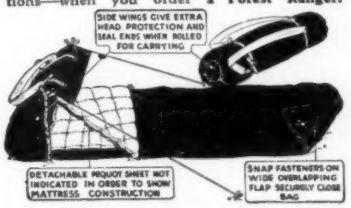
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Waterfowl Refuge Contest

Foresters identified with projects involving water and marsh areas are offered opportunities to achieve recognition in the wildlife conservation movement and to win some of the host of cash and other prizes offered in a National Waterfowl Refuge Contest sponsored by the More Game Birds Foundation, 500 Fifth Avenue, New York City.

A total of $500 already has been contributed for cash prizes. Twenty silver trophies have been provided. Engraved certificates of merit for every qualifying entry will also be awarded. These are to be illustrated by the noted cartoonist, Jay N. ("Ding") Darling, Chief of the Bureau of Biological Survey, who is Chairman of a committee of judges representing national wildlife organizations.

Any group or individual who can accomplish the establishment of a waterfowl refuge, on a suitable public or private water area of three acres or more, may enter. The contest is free. Three informative, fully illustrated booklets, entry blanks and all details on how to proceed are available from the Foundation without charge.

The contest has been arranged by the Foundation as a means of supplementing the $8,500,000 farm relief-wildlife program of the Department of Agriculture. While the federal agency is engaged in the purchase of 1,000,000 acres of submarginal lands, it is pointed out that thousands of private and public ponds could be used as waterfowl resorts to supplement the national program.

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FORESTRY IN CONGRESS

By G. H. COLLINGWOOD

During the past month much of the major legislation relating to forestry and conservation has marked time awaiting action on the work relief bill, which after several stormy days in the Senate was referred back to the Senate Appropriations Committee on February 15. This bill proposing to authorize appropriations of $4,880,000,000 was again reported to the Senate on March 5 with numerous amendments.

Included within the program for expenditure of this vast sum is the specific provision that $600,000,000 be allotted the Civilian Conservation Corps for its continuation and expansion as recommended by the President. No action has been taken, however, on the Walsh-Darden bills (S. 806 and H. R. 3813) to continue the Corps for two years after March 31. There is, however, small likelihood that they will meet material opposition in either House.

The forest purchase program to which has been allotted $30,000,000 of emergency conservation work funds, will probably be continued from this source. Meanwhile, authorizations for continued appropriations for forest purchases from regular sources are contemplated in the omnibus forestry bill, although that bill has not yet been introduced in Congress and plans for its introduction have not been announced. Another bill to give Federal aid to the states in acquiring land for State Forests is being drafted, but is awaiting approval by the National Forest Reservation Commission through which the funds are to be expended.

The work relief bill as proposed by the Senate will provide $350,000,000 for "sanitation, prevention of soil erosion, reforestation, forestation, flood control and miscellaneous projects." Under this heading funds are expected with which to carry on the campaign against the Dutch elm disease. Encouragement is found in President Roosevelt's reply of March 5 to the letter of the President of The American Forestry Association, urging allocation of $1,500,000 for the work. "The type of work involved," the President wrote, "lends itself particularly well to employment for relief purposes, it is understood, and hence there is no reason why support of this work should not be sought from grants from funds made available for employment purposes. The Department of Agriculture is now carefully studying this problem and estimates for the continuation of the work for another year are in course of preparation. Your letter is being referred to that Department for its consideration in connection with the preparation of these estimates."

Under the same heading in the work relief bill, $2,000,000 or more may be allotted for control of white pine blister rust. The planting of trees and shrubs along highways and in public places with work relief funds, as approved by the Federal Emergency Relief Administration, may be financed from the $900,000,000 to be allotted to "public projects of states or political subdivisions thereof." Another $350,000,000 may be used for flood control.

The Appropriation Bill for the Department of Agriculture for the fiscal year beginning July 1, 1935, was reported to the House on March 14 as H. R. 6718, and passed on March 15 with a total of $118,113,878.14. Recommended appropriations for the Forest Service are $11,460,676 representing an increase of $2,841,353 over the current fiscal year, while the Biological Survey has a total of $1,195,184.

The Forest Service increases include $763,492 to administer and protect new forest areas now being acquired, and an increase of $235,746 for planting on National Forests, bringing the total to $400,000 as authorized in the Knutson-Vandenberg Law of 1930, and promising the planting of the major portion of the 180,000,000 trees now available in Forest Service nurseries.

Increases of $368,235 recommended to forest research restore to a permanent status some items that have been carried with emergency funds and bring the total for this work to $1,350,288. These increases will permit the establishment of the Rocky Mountain Forest Experiment Station which completes the program of regional experiment stations authorized in the McNary-McSweeney Law of 1928.

Another item of $50,000 promises to assure the continued operation of the Institute of Forest Genetics near Placerville, California, as a part of the California Forest Experiment Station. This institution was established in 1925 by James G. Eddy, of Seattle, Washington, as the Eddy Tree Breeding Station and until recently was maintained with private funds. It is now operating with an allotment of Federal emergency funds, but with passage of this item the Department of Agriculture will acquire it as a gift and assume responsibility for its continued maintenance.

The nation-wide survey of timber resources authorized under the McNary-McSweeney Law is recommended to receive $129,703—a decrease of $69,339 from the $199,042 now available from emergency and other appropriations. On March 1, shortly before the close of the subcommittee hearings, which had continued for nearly six weeks, the Forester of The American Forestry Association asked that this be increased to $250,000. Without such an increase from regular or emergency sources field work in the southern coastal states and in the Pacific northwest may have to be curtailed to permit assimilation of data that has now been gathered. This survey was originally planned to be completed in twelve or fifteen years. It has been under way for six years and by the end of June will have covered 230,000,000 acres, leaving almost 674,000,000

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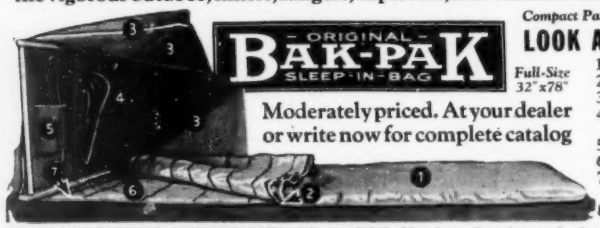

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to be covered. Satisfactory continuity can only be assured, however, if adequate regular appropriations are provided.

The recommended appropriation of $1,578,632 for cooperation with the States in forest fire prevention and suppression is only $5,013 above the present appropriation and is wholly absorbed in the salary adjustments. Efforts were made by citizen groups to have this increased to $2,500,000 as authorized in the Clarke-McNary Act.

Although the Office of Blister Rust Control in the Bureau of Entomology and Plant Quarantine has salary requirements approximating $345,000 the bill was reported with the Budget recommendation of $250,000. This was in spite of the personal appearance of representatives from Washington, Idaho, Massachusetts and New Hampshire, all of whom urged an appropriation of $450,000 to permit adequate administration of such emergency funds as may be allotted to blister rust control.

Dutch elm disease control retained the Budget estimate of $261,156, with the provision that this be *immediately available* upon passage of the bill. Between $1,500,000 and $2,200,000 may be allotted from the work relief bill. The regular appropriation is essential to assure an adequate scientific and supervisory force through the fiscal year and to authorize scouting in the early summer in case passage of a bill to provide the necessary emergency funds is delayed.

The Budget estimate of $200,000 for "code compliance inspection" was eliminated on the ground that there is no existing legislation authorizing codes during the fiscal year 1936. Such legislation is now before Congress. Should it be passed in a satisfactory manner efforts will be made to restore this item while the bill is before the Senate.

An increase of $20,000 for forest economics studies will permit investigations in New York and other northeastern states in the cooperative growing, manufacturing and marketing of forest products.

Wildlife and game management studies in the Biological Investigation of the Biological Survey have been recommended to receive $118,149 which is an increase of $48,438, and control of predatory animals is increased from $398,982 to $453,692.

The Deficiency Appropriation Bill (H. R. 6644) carrying a supplemental estimate of $2,348,000 to cover the cost of fighting and preventing 10,531 forest fires in the National Forests during the present year passed the House and Senate. Of the 613,000 acres burned over by the middle of March, 336,000 acres were in Montana, eastern Washington and northern Idaho. The total damage to the National Forests for the year has been estimated to be $1,445,000.

The Senate restored the sum of $15,000 to the Bureau of Fisheries allotment in H. R. 5255 for administration and enforcement of Federal Laws regulating inter-state transportation of black bass. The total appropriation of $1,449,200 for the Bureau of Fisheries is $123,873 more than for the current year.

On March 4 the House passed H. R. 6223 providing appropriations for the Department of the Interior, with $15,713,890 for the National Park Service. This is an increase of $4,394,250 above the current year's appropriation but $44,640 less than the estimates submitted by the Budget. The increase over the current appropriation is largely accounted for by an additional $2,500,000 for roads and trails making a total of $7,500,000 available for this purpose during the next fiscal year. The bulk of the remainder is for the administration and maintenance of public buildings in the District of Columbia.

The new Division of Grazing control, regarding whose transfer to the Department of Agriculture there are persistent rumors, is allotted $250,000 for administering the Taylor Grazing Act of June 28, 1934, and for setting up fifty or more grazing districts in the eleven western states. More recently information has been received that this number may be reduced, and the districts made larger. The Interior Appropriation Bill also includes $425,000 for the administration and protection of 36,102,000 acres of indian forest lands. This is $94,490 greater than for the current fiscal year.

The possibility that the Soil Erosion Service may be placed with the Department of Agriculture is left in confusion by two bills recently introduced by Representative Jack Nichols of Oklahoma. One (H. R. 6319) would create the Soil Erosion Service as a separate bureau in the Department of Agriculture, while H. R. 6432 would create it as a separate bureau in the Department of the Interior. The first has been referred to the Committee on Agriculture while the latter is with the Committee on Public Lands. No hearings have yet been scheduled.

A bill to make the National Resources Board permanent is reported to have been drafted, but awaits passage of the $4,880,000,000 work relief bill.

Izaak Walton League Convention

The National Convention of the Izaak Walton League of America will be held in Chicago, April 11, 12 and 13, it has been announced. According to S. B. Locke, conservation director of the League, highlights of the convention will be a declaration of support for "immediate measures for restoration of waterfowl numbers, including a closed season if necessary; restoration of marshlands; a nation-wide plan to control water pollution through the establishment of district watershed boards; and perpetuation of the salmon and steelhead fisheries of the Pacific Coast."

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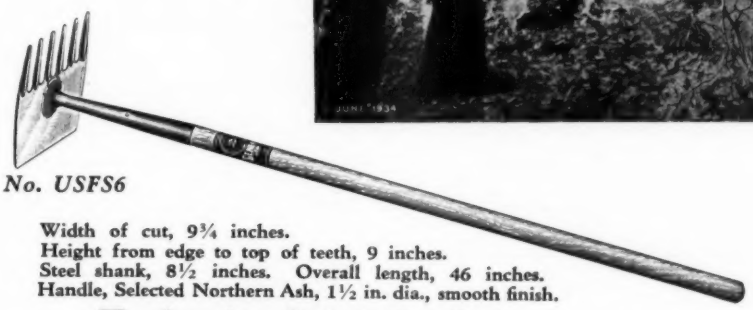

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Book Reviews

WILD FOWL DECOYS, by Joel Barber. Published by Windward House, New York City, 1934. 156 pages, illustrated. Price, $6.00.

To Mr. Barber, American sportsmen are indebted for one of the most interesting and unique volumes in recent years—a history of wild fowl decoys. It is a delightfully written, beautifully bound book, elaborately illustrated with 120 plates. With the wide interest in migratory birds, it is strange that no one heretofore has considered decoys worthy of historical sketch. It has remained for Mr. Barber to find a wealth of colorful lore and data in these wooden lures whose origin is lost in obscurity.

For twenty years the author has collected decoys as antiques and moderns, finding in them "the history of American waterfowl, their rise and fall." His search lead to settings of romance all the way from Nova Scotia to South Carolina—tidewater villages, ramshackled boat yards and desolate shores. "Of all birds subject to attack by decoys," the author confesses, "I am perhaps the most susceptible bird of all."

A reading of "Wild Fowl Decoys" gives one a feeling of having acquired all that is known about decoys. As a matter of fact, the book is the sole text on this subject. In addition, it rewards one with hours of easy, delightful reading. It is an essential volume in every sportsman's library and a distinct addition to any library.—O. B.

TREES OF NOTE IN CONNECTICUT, by Katharine Matthies. Published by Connecticut Daughters of the American Revolution, New Haven, Connecticut. 35 pages—illustrated. Price $1.25.

Arranged by counties and illustrated with photographs and reproductions of old drawings, Miss Katharine Matthies has assembled a wealth of interesting information in her book, "Trees of Note in Connecticut." This result of her labors as State Chairman of Conservation and Thrift of the Connecticut Daughters of the American Revolution provides a valuable record for all who are interested in history and in the commemoration of great names or events as recorded in the lives of beautiful trees. The text is supplemented by an outline map of Connecticut, showing the location of the historic trees described in the book as they are distributed over the state. —G. H. C.

SIXTH REPORT OF THE UNITED STATES GEOGRAPHIC BOARD, 1890-1932. Paper cover. 834 pages. For sale by Superintendent of Documents, Washington, D. C. Price, 80 cents.

"Geographic names, like roads and boundaries, are superimposed by man upon the surface of the earth. They constitute a revealing and important record of human migration and settlement, and afford insight into the history, the language, the economic and social structure, and the religious faith of a people."

This opening paragraph from the *Sixth Report of the United States Geographic Board* reveals the fact that the text is not dry data. In fact "Uncle Sam's Handbook on Geographic Names" might be the title of this document recently published by the United States Geographic Board. It contains some 25,000 decisions giving the correct names, spellings, locations, pronunciations, and origin and meaning of names which appear on our maps.—G. H. C.

AMONG THE CURRENT PUBLICATIONS

The Present Status of National Conservation and the Duck Stamp, by Hon. Harry B. Hawes. Address delivered at the Sixth Annual New England Game Conference, held under the auspices of The Massachusetts Fish and Game Association at Boston.

Post-Logging Decadence in Northern Hardwoods, by Ralph C. Hall. Bulletin No. 3, School of Forestry and Conservation, University of Michigan. This pamphlet presents the results of a three-year investigation of the extensive deterioration that commonly takes place in northern hardwoods after logging.

White-Tailed Deer of the Adirondacks, Roosevelt Wild Life Bulletin, Vol. 6, No. 2 of the Roosevelt Wild Life Forest Experiment Station, Syracuse, New York. Contains the results of much interesting study and observation of the white-tailed deer in the Adirondacks.

Analysis of Logging Costs and Operating Methods in the Douglas Fir Region, by Axel J. F. Brandstrom, Senior Forest Economist, Pacific Northwest Forest Experiment Station. Published by the Charles Lathrop Pack Forestry Foundation under the auspices of the West Coast Lumbermen's Association. This bulletin covers the results and conclusions from a comprehensive series of time and cost studies of virtually all methods of logging and types of logging machinery used in the region.

Results of a Project in Hybridizing Poplars, by A. B. Stout and E. J. Schreiner. Reprinted from the *Journal of Heredity*, June, 1933, Washington, D. C. In considering definite plans for the use of poplars for reforestation it has been the aim of the writers to evaluate and test the known species and hybrids and to produce through hybridization more valuable types than those already in existence.

Studies on Flow of Gum in Relation to Profit in the Naval Stores Industry, by Austin Cary. Published by the *Weekly Naval Stores Review*, Savannah, Georgia. Price ten cents. A series of articles prepared by Mr. Cary and published in the *Naval Stores Review* from July to September, 1933, and here reprinted in an eighteen page pamphlet. Mr. Cary's long experience in Southern pine with particular reference to the production of naval stores is here presented in valuable detail.

Residual Wood After Logging in the Ponderosa Pine Region, by I. V. Anderson, Section of Forest Products, Northern Rocky Mountain Forest Experiment Station, Missoula, Montana. An inventory classification and analysis of unused wood left on logged-over areas of western Montana and northern Idaho.

The Dutch Elm Disease, by Curtis May and G. F. Gravatt. Circular No. 170, United States Department of Agriculture, Government Printing Office, Washington, D. C. Price five cents. The purpose of this circular is to interest shade-tree owners, nurserymen, tree surgeons, foresters, and others working with trees in sending in specimens from unhealthy elms so that the distribution of the disease may be ascertained as a basis for control policies.

Guide to The Appalachian Trail in Maine, Publication No. 4, The Appalachian Trail Conference, Washington, D. C. This pamphlet gives detailed trail data in a north to south direction from Katahdin to Mt. Bigelow, a distance of 173.5 miles.

The Appalachian Trail, Publication No. 5, the Appalachian Trail Conference, Washington, D. C. This booklet, prepared by Myron H. Avery, Chairman of the Appalachian Trail Conference, brings up to date earlier articles on the Trail.

FORESTRY--A PUBLIC AND PRIVATE RESPONSIBILITY

(*Continued from page* 161)

by buying strategic tracts in the midst of privately owned timberlands, can not only help to stabilize the lumber industry in the region, but use such areas as demonstration forests. These public lands will be managed on a permanent sustained yield basis. They cannot, however, be expected to maintain mill capacity on the present basis. Neither can private lands be expected to maintain present mill capacity; nor the two together. In combination, however, on a sustained yield basis, such adjustment as must be made will be less drastic, and the foundation can be laid for permanent communities, though small in size. This is the minimum which the public, in its self-interest, must require, and the one to which the industry must adjust itself. The present acquisition policy of the Forest Service, therefore, cannot be considered as aiming at competition with private owners. On the contrary, its whole purpose is to strengthen the economic structure of the regions involved, and to assure the industry, and the communities dependent upon it, a permanent existence.

To accomplish this the Forest Service has definitely in mind to plan its purchases, after careful and thorough study and consultation with the State agencies and private owners regarding the possibilities of creating sustained yield units, capable of supporting forest industry communities. The aim, of course, is to insure that each owner within such a unit shall take full responsibility for maintaining his land in a state of high productivity. It should be a truly cooperative undertaking, with common goal but with individual responsibility for the respective holdings. In such an undertaking, however, it would be impractical for the Government to undertake management of too small blocks. This statement of policy refers particularly to purchase of timberlands other than those purchased primarily for watershed protection or other purposes than timber production.

Supplementing the Federal acquisition program there should be acquisition by the States of similar but, possibly, smaller and more widely distributed areas, these also to be handled on a sustained yield basis. The management of these areas should be coordinated with that of Federal and private lands. I believe it would be wise public policy to encourage the States to acquire such areas, even to the extent of extending Federal assistance. So much for the policy of acquisition.

The Place of Government Logging

Another question in which I know you are most vitally interested is competition from Government logging or milling. The Government is faced, as you know, with a very real and immediate problem of providing useful work to millions of its citizens. This is a task from which we cannot shrink and which we must face realistically. Where a community on or close to the public forests is in need of employment, and where there is a local demand for forest products, and private initiative is lacking or unwilling to undertake logging, the Government would be justified, in my opinion, in logging its own timber as a means of providing immediate work and supplying local needs. This is not essentially different from present day contract logging as practiced by the lumber companies, except that the initiative would come from the Government and that the work would be under closer supervision.

There is much to be said for this type of logging on public forests. The Government is charged with the responsibility of managing its forests on a sustained yield basis and with the utmost regard for improving conditions of growth and for protection against fire and disease. This can sometimes be accomplished much more readily by selling logs, cut and removed from the woods under the immediate supervision of forest officers, than by selling stumpage. * * * * If the Government sells logs instead of stumpage it has greater latitude in determining the amount cut per acre so as to meet silvicultural requirements.

Government logging of its own timber, even if carried on fairly extensively, will not offer serious competition to private enterprise. Less than five per cent of all the logs cut now come from the National Forests. Most of the sawmills operating on National Forest timber would be just as well off if they purchased the logs instead of the standing timber. Sawmills operating on their own timber would not be affected by Government logging, because it is not the intention of the Forest Service to force more logs or lumber on the market than can readily be absorbed.

I would not recommend Government logging in inaccessible regions where construction of costly railroads and other improvements would be required. Under such conditions selective logging and sustained yield management might not be practical, and such operations would be even less justifiable on public than on private forests. But as the public forests become more fully equipped with permanent roads, the delivery of logs at mills or at the roadside, where they may be sold to the highest bidder, should become a common practice, just as is done in many countries today. Government logging of its own timber in a manner most advantageous to the future growth of the forest is as logical as the harvesting of his crop by a farmer.

Need of Government Milling Rare

As to saw-milling or any other manufacturing, justification for Government operations can be found only in exceptional cases. The Forest Service does not propose to embark on competition with the lumber industry, which

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in general is already too much over-equipped with plant capacity, although much of it is badly located with respect to sustained yield operation, is obsolete, or of too crude design for economic production. The Forest Service prefers to assist private industry in retiring surplus plants and in gradually substituting plants in forested areas directly related to sustained yield capacity.

It would, however, be to the advantage of the lumber industry for the Government to install a few small mills on an experimental basis in various regions for the purpose of testing and demonstrating better methods of milling and utilization. It is well known that in the eastern forest regions utilization of inferior portions of stands has hardly anywhere been successfully solved. The systematic removal of these trees, usually in partial cuttings, is necessary if better and more productive growing stock is to be gradually built up. It is unlikely that private enterprise can afford to undertake the necessary experimental work in this field. It is very desirable for the Forest Service to do it in a few localities, largely with labor which would otherwise be unemployed and on Government relief.

In some instances it is in the public interest for the Government to produce its own lumber, where this cannot be obtained readily or at reasonable cost from other sources. The construction of dams remote from railroads but close to public forests, construction of buildings connected with forest administration, and similar construction where the sawmill forms an essential part of the equipment of a large public engineering enterprise are cases in point. In order to salvage fire-killed or bug-killed timber that cannot be handled advantageously by existing sawmills, the Government may have to convert it into lumber or other forest products.

Such Governmental activities should in all cases be dictated by public necessity. Cases such as those mentioned are, I am sure, rare. If the industry meets its responsibilities to the public by furnishing needed materials at reasonable prices and by helping, as it is being helped, to stabilize employment and community life, the need for Government logging and timber conversion will not arise.

No matter how extensive the public forestry program may be, it is utterly impossible that all of the forest land will be brought into public ownership. The boldest estimate of public acquisition that has been made leaves approximately half of all the commercial forest land in private ownership. At present, four-fifths of the entire commercial forest land is privately owned and the responsibility for managing these lands so that they insure security and stability of communities dependent upon them, rests mainly on the private owners.

The Aim of Forest Service Policy

The policy which the Forest Service should follow, it seems to me, is perfectly plain. Besides building up the public forests, it must aid and encourage private forest management. All unreasonable obstacles to successful private forestry should be removed. States and local governments must eventually, in their own interest, make sure that their timberland tax is spread over a large area with reasonable and moderate valuations at low rates, thus giving the industry a chance to practice sustained yield and to guarantee to the local governments a continuous source of income, instead of increasing taxes on a constantly narrowing base with high rates. This is a vicious circle through which both the timberland owner and the local government lose. This current land tax can be supplemented with a deferred tax on yield when the ripe timber is cut.

With the lumber industry recognizing its social responsibilities there is no reason why the whole question of taxation should not be reconsidered in the interest of making private forest practice more assured. The attitude of the local governments in the past was direct outgrowth of the actions of the industry itself. Instead of treating the forests as a permanent, renewable resource, the forest was used as a mine which was exhausted and abandoned with little or no consideration of the social and economic consequences to the dependent communities. This resulted in hundreds of so-called ghost towns, abandoned by their inhabitants after their investments in homes and other property had been wiped out, or in stranded populations supported largely by public subsidies. Many counties and townships in the cut-over sections of the country receive State subsidies in order that they may carry on Governmental services that are greatly in excess of their own contributions to the State treasuries. It was but natural that the local communities and Governmental taxation agencies insisted on taking all the traffic would bear while the taking was good. With a change of methods on the part of the industry, I am sure that local taxation agencies will see that it is to their own advantage to make timberland taxation reasonable.

Community Support the Common End

It is to the credit of the lumber industry that it has realized the need for a change in the handling of its lands and has voluntarily undertaken under Article X of its code to keep forest land permanently productive with sustained yield as the eventual goal. I realize that there has not yet been sufficient time to test the efficacy of self-imposed forest regulation by the industry, and I further realize that old habits and pioneer psychology can be changed only gradually, and that the mistakes of the past cannot be repaired overnight. Yet the placing of the lumber industry on a permanent basis must not be postponed too long.

The industry should not wait until the Government has smoothed out all the difficulties in the path toward sustained yield management. It is essential to the welfare of the industry itself to abandon its policy of quick liquidation and disregard for the social consequences. The industry should seek of its own accord to prevent the construction of new plants in excess of the normal productivity of the tributary forests, and should seek to transfer the existing excess capacity to other localities where the normal production of the forests is not being utilized. The present set-up of the N.R.A., with a deputy administrator for forest conservation and the Forest Service as a technical and inspection agency, should insure more speedy progress and should be of immediate benefit to the industry itself, as well as a guarantee to the public that forest production will be made permanent in the future. The proposed amendment, which would bring under the Code all minor forest industries, together with the contemplated division of responsibility for large and small operators, respectively, between the industry and the Forest Service should do away with many difficulties that have hindered the enforcement of the Lumber Code.

In brief, the Forest Service, through its own activities on the National Forests, and through cooperation with private owners and forest industries, strives toward sustained yield management of both public and private forests. I can best express this objective in the words of Schedule C of the Lumber Code itself: "to provide without interruption or substantial reduction raw material for industry and community support." To this, our common end, I invite and earnestly desire your cooperation.

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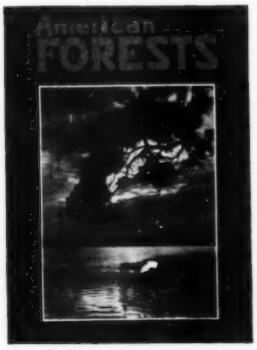

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April, 1935

Forestry Tour to Scandinavia and Finland

A thirty-six day tour for a limited number of American foresters through Scandinavia and Finland is planned by Professor S. O. Heiberg, of the New York State College of Forestry, at Syracuse, in cooperation with Dean Tor Jonson, of the Swedish Forest School, Dr. Cajander, of the Finnish Forest Service, Professor Saari and other notable forest leaders of those countries. The tour will start from Copenhagen July 2 and will return to that city on August 7. A single charge of $325 is expected to cover all costs including meals, rooms and transportation from Copenhagen back to Copenhagen.

As outlined by Professor Heiberg, the foresters participating in the trip "will see industrial forestry in Europe's heaviest forested countries; cooperative forestry in Denmark's intensively handled woodlands where an annual production of 200 cubic feet per acre is common; a town which pays no taxes because its forests pay them; Europe's most modern sawmills; reforestation of wasteland and miles of shelter belts."

The party is limited to twenty-four and early applications are invited by Professor Heiberg.

Michigan Garden Clubs Sponsor "Stop Useless Fires" Campaign

Two hundred thousand Michigan citizens will be asked to pledge themselves individually to stop useless fires through a campaign planned by the Federated Garden Clubs of Michigan, according to Mrs. J. S. Symons of Saginaw, Chairman of the Conservation Committee.

The necessity for such an effort was decided upon by the Garden Clubs at a conference held with the State Department of Conservation, at Lansing, in October, and plans have been worked out with the Department, representatives of the United States Forest Service, the University of Michigan, at Ann Arbor, and Michigan State College.

It was pointed out that ninety-three per cent of all forest fires in Michigan were man-caused and that while slow but steady progress in prevention is being made through warnings, law enforcement, and indirect appeals, the individual is difficult to reach. The clubs' campaign is designed to reach them.

Private Shelterbelts Increase

An unprecedented increase of tree planting in or adjacent to the proposed Great Plains Shelterbelt is evidence that the people of that region are becoming increasingly interested in the plan, says Paul H. Roberts, of the Forest Service, acting director of the shelterbelt project.

"Private individuals, as well as state and local governments, have shown their approval of our efforts to improve conditions in the Great Plains by adopting shelterbelt programs of their own," said Mr. Roberts.

"Farmers of Wisconsin have adopted a five-year schedule of their own, and nurserymen throughout the area tell us they are having a great increase in orders for seedling stock from individual farmers."

Acknowledgment

Belated acknowledgment is made to the Brooklyn Botanic Gardens for their courtesy in furnishing the photographs for the illustration of the article "Hachinoka" in the March issue, which dealt with the Japanese art of dwarfing tree species.

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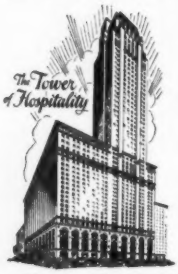

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ANCESTRAL HIGHWAYS OF THE SKY

(*Continued from page* 159)

the game waterfowl, although our knowledge of the itineraries and "time tables" is more complete for these birds. Nevertheless, it is true that twice each year the main migration arteries are thronged, not only with the ducks and geese, but also with a great assemblage of shorebirds, blackbirds, orioles, thrushes, warblers, vireos, swallows, wrens, sparrows, and others. Possibly nowhere else on earth is there such a concentration of individuals and species of migratory birds as may be viewed each season at several points in the Mississippi Valley.

In viewing these movements we find that for most species of birds the fall migration is a more or less leisurely journey, the travelers seeming to be content to drift lazily southward alternating periods of travel with intervals for feeding and loafing in favorable localities. In the spring, however, a noticeable feverishness is shown by the majority of the winged host which exhibits a restless impatience to reach the nesting grounds. The gray-cheeked thrush is a good example of this rapid migration. It winters in Colombia, Ecuador, Peru, Venezuela, and British Guiana and does not start its northward journey until many other species are well on their way. It does not appear in the United States until the last of April, but by the end of May it has reached northwestern Alaska, having made the 4,000-mile trip from Louisiana at an average speed of about 130 miles a day. In contrast to the speed shown by this thrush there is the more sedate movement of the Canada goose.

Most birds make frequent stops along their routes for the purpose of food and rest, but long non-stop flights are not uncommon. The trips made by certain ducks and geese across Pennsylvania and those across Tennessee and Kentucky have been mentioned, but the champion non-stop flyer over land surfaces appears to be the blue goose. Most individuals of this species spend the winter in the coastal marshes of Louisiana, where they tarry until a comparatively late date in the spring. It is rare for a large flock to be observed while on migration, but it seems probable that their route lies through the Mississippi Valley and then overland to the southern shores of James Bay in Canada, thence north to their summer homes in the sub-Arctic regions.

Some of our common summer birds are not content merely to go to South America for the winter. Many push on across the Equator and finally come to rest in the pampas of Argentina, or even in Patagonia. Of all North American land birds the common fork-tailed barn swallow and the nighthawk probably have the longest migration route, as they occur north to Yukon and Alaska, and south to Argentina, 7,000 miles away. Some of these birds must make long flights over the open sea where there is no opportunity for either food or rest, as was the case with barn swallows that I once saw in May on Beata Island off the south coast of the Dominican Republic and which must have flown nearly 400 miles over the Caribbean Sea from the north coast of Colombia or Venezuela. Such seasonal flights are exceeded in length, however, by the journeys of several species of shore birds. In this group there are nineteen species that breed north of the Arctic Circle and winter in South America, six of them going as far south as Patagonia, and thus having a migration route of more than 8,000 miles.

One member of the shorebird group, the golden plover, has a remarkable trail through the sky. It nests on the Arctic tundra and in autumn flies southeastward across Canada to Labrador and Nova Scotia, thence directly across the Atlantic Ocean to the Lesser Antilles and the mainland of South America. While it can swim lightly and easily, it is not a true "water-bird," and it probably accomplishes the entire 2,400 miles across the water without pause or rest, in fair weather the flocks passing Bermuda and sometimes even the islands of the Antilles without stopping. While most birds journey by day or else by night, the golden plovers in making this remarkable trip fly both day and night. During the period from September to March they are content to remain on the Argentine pampas and when the time comes for the return to their nesting grounds, instead of retracing the country so successfully negotiated in the autumn, they use an entirely different route. Flying northwestward across South America and the Gulf of Mexico they strike the mainland of North America on the coasts of Texas and Louisiana. From this region they proceed slowly up the Mississippi Valley and across the Prairie Provinces of Canada to their breeding grounds, having made their round trip in the form of an enormous ellipse that has a minor axis of about 2,000 miles and a major axis of about 8,000 miles.

The champion "globe trotter" among all birds, however, is the Arctic tern, a member of the group sometimes known as "sea swallows" because of their long, forked tails, and graceful flight. This particular species has a breeding range that is circumpolar, while in winter it is found south to the Antarctic regions. Probably no other creature in the world enjoys so many hours of daylight since for those birds nesting in the far North the sun never sets, while during their sojourn in the south, daylight is continuous. The trails followed through the sky by those that breed in Europe, Asia, and western North America has been worked out with little difficulty, but until recently mystery has cloaked the travels of those individuals that occupy the colonies in the eastern part of Arctic America.

The breeding range of this species extends south on the Atlantic coast to Massachusetts and many observers studying these terns at their breeding colonies have been baffled by the fact that when the time came for the autumnal migration the birds vanished as completely as though they had never existed. Other birds nesting in the same areas were known to travel southward along the coast, but the Arctic tern is almost never seen on the Atlantic coasts of either North or South America south of its breeding grounds. Again the numbered aluminum bands are to be credited with the solution of the problem, and we are now beginning to get the picture of what is apparently not only the longest but also one of the most remarkable of all migratory journeys.

The evidence now available makes it seem likely that the Arctic terns of eastern North America originally found their way here from the Old World, coming probably by way of Greenland and Iceland. Consequently, when the time comes for their exodus to winter quarters they fly back eastward along their ancestral route to the shores of Europe and then go south along the African coast. These birds, banded as chicks at their nests, have been recovered in Europe and Africa. One was found near La Rochelle, France; the second at the mouth of the Niger River, West Africa; and the third near Port Shepstone, Natal, South Africa. The flight of the tern responsible for the latter record is the longest known for any bird as it aggregated between 8,000 and 9,000 miles. The bird was banded as a downy chick at its nest on July 23, 1928, at an insular colony off the coast of Labrador and was found dead on the African coast on November 14, 1928. As one news writer facetiously remarked: "Lindy's only rival was a baby just three months old."

LET'S LOOK TO THE ROADSIDE

(*Continued from page* 171)

introduction of trees and plants unnecessary.

It is desirable to protect what is to be conserved. The control of the scenery off the right-of-way is an ultimate possibility in the ideal development. The elimination of nuisances and the exclusion of undesirable conditions foreign to the essential purpose of a highway are necessary to make the highways orderly and clean. A reasonable regulation of roadside conditions, therefore, is vitally necessary to protect as far as possible any efforts directed to roadside improvement.

The introduction of trees and plants is the final part of a logically developed roadside program. The conservation and development of the natural beauty along highways suggests the informal planting arrangement. Native types of carefully selected nursery-grown plant materials are generally considered most appropriate for the majority of highway situations. The formal treatment is satisfactory only in urban surroundings where architectural limitations dictate the more usual city street tree arrangement.

Some of the states are taking advantage of the present unusual opportunities to obtain the larger sizes of trees that are becoming overcrowded in the nurseries for little more than the labor cost of digging. A reasonable admixture of a limited quantity of larger size stock in planting groups is an effective method of producing more immediate results, if extra precautions are taken in the handling and care of such items when transplantings are made. Allowance should also be made for a sufficient amount of after-care until the trees are safely established in their new position.

Observations of highway plantings indicate that one and one-half inch to two inch diameter nursery rooted stock of good grade is the size most used. Two inch to four inch diameter specimen trees, however, may be transplanted successfully with a ball of earth wrapped in burlap. The size of the earth ball may be determined by the simple rule of requiring one foot diameter of ball for each diameter inch of tree measured four feet above the ground.

There are ample possibilities for beautiful highways near every community and in every state in the nation. There is an obvious and growing need for roadside development. Highway administrators must recognize the vast and undeveloped opporunity that present public support affords to coordinate the strictly utilitarian and the inspirational phases of highway improvement if they are to perform adequately the social functions of their profession.

Editor's Note—The nurseries of the country report hundreds of thousands of trees, in the larger sizes, which must be sold this spring or removed and destroyed in the process of thinning. These trees, the Editor has been advised, may be purchased at exceedingly low prices—if purchased this spring. The varieties in excess include Norway maples, white birch, red-bud, dogwood, magnolias, arbor vitae, thorns and others.

Sponsors of planting projects coming under the new working procedure of the Federal Emergency Relief Administration should get in touch with their nearest nurseries immediately—for there is still time this spring to do considerable planting in many regions of the country.

FORESTRY AND REGIONAL PLANNING

(*Continued from page* 168)

Production includes that of timber, cordwood, pulpwood, maple sugar, naval stores, Christmas trees, and so on.

Protection involves the control of fire, stream flow, soil erosion, wind intensity and possibly rainfall.

Recreation involves not only the picnickers, looking for an open sapce to give vent to their daily inhibitions, but to the more serious brands of outdoor avocationalists, namely the hunter and fisherman, the student of wildlife and finally the camper and seeker of the wilderness. These forms of broad grade recreation seem to require three major classes of areas for leisure-time activity—*outing areas, wildlife sanctuaries,* and the most vital thing of all, the *wilderness area.*

I see no real conflict between forests and parks. There have been petty jealousies that have not helped in the better solution of problems of mutual interest. There are areas which by virtue of their scenic grandeur, biological or historical interest are so important for preservation for public use that all other possibilities of land use, agriculture, forestry in the limited sense, must be subordinated to the greater objective of the particular type of park for which the area is fitted. Forestry may be practiced on such areas, but it must be subordinated to the major concept. Thus we have the basis for our system of national, state, and local parks. It seems to me that the forestry and the park programs have a common meeting place in recreation. Recreation in its broadest sense will make use of forests and parks. There are instances where both forests and parks will restrict its use and where the recreation program must be modified, but very rarely will this constitute a serious limitation on either forests or parks.

In the present state of our evolution of this super-science, the present day so-called regional planner is obviously a far cry from an ideal super-planner, if one should evolve at some future date. A mere pigmy he is, yet he must consider the whole picture. At present he is an integrator merely of the several fields and functions noted—those of the forester, agriculturalist, engineer, agri-industrial economist, and so on. His final objective is that of the others, but he must see that the relationships harmonize.

The immediate objective of the forester is to develop forests for the functions already mentioned. The objective of the agriculturalist is to develop the soil; of the hydro-electric engineer to harness water powers; but all of these immediate objectives head up to an ultimate one—what Congress calls "well-being," Jefferson's "pursuit of happiness." This ultimate objective cannot be too strongly emphasized. It is right here that we have the reason for the regional planner, which is to marshal the vast variety of man's activities and focus them upon this single, yet most comprehensive, objective of all human life.

This proposition, as obvious as the multiplication tables, would not need mentioning were it not that development under an "unplanned economy" persistently forgets it. Even planners alas forget it, and a great deal of mental cogitation, passed off as planning, omits the very point of planning. The results of such cogitation are not plans; they are descriptions merely; they omit the need of focusing human activity upon the ultimate human objective.

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PREHISTORIC TREE TRAVELS

(*Continued from page* 164)

than has existed before or since. In Europe, the beds of lignite, or brown coal, are being formed; contributing to their strata are the trunks of Sequoias, bald cypresses, and hickories, and fruits of black walnuts and butternuts like those of today. The arboreal specimens are all familiar save one, the black locust, which appears on the Pages of Rocks for the first time. A comparative newcomer in petrological pictographs, it is nevertheless to have an eventful history.

The Miocene epoch, next scene in the earth-drama, was one of great events on the geologic stage. The Rocky Mountains had risen almost to their full height, and the midwestern marshes had become the Great Plains. In Europe and Asia the Alps and Himalayas were builded. Mammalian and hardwood development reached their peak. It is the climax of the story, the triumph of the flowering plants.

In this climatic epoch came two new specimens to the prehistory of trees, the ailanthus and the peach tree. Neither of these, curiously, is today native to America. The Miocene ailanthus was closely related to the Chinese and East Indian "tree of Heaven," now naturalized in the eastern part of this country. Five species of peach are found in Miocene records, though none is naturally resident to the United States today; the peach is an inhabitant of eastern Asia, and has been introduced to America within historic time.

Most of our common trees were already in existence, and were more widespread and abundant, both as to species and individuals, than they are today. Fifty Miocene poplars, for instance, have been described, more than twice as many as are found on contemporary lists; six or seven kinds of sassafras are known to have existed, whereas at present there are but three; the 135 Miocene species of birch, now extinct, were added to the thirty kinds that flourish today: four species of beech are living today, while in the Miocene thirty are known; the nine tulip-trees and twenty-three magnolias of the Cretaceous thrived in the Miocene, to decline to the narrowed number and distribution of the present; one hundred species each of sumac and holly attained to their widest range, and though as many or more kinds exist today, the individual numbers are greatly diminished; and this representative list might be produced almost indefinitely, to include the greater number of present hardwoods.

Pliocene time was a transitional period in which, under the beneficence of favorable climate and the existence of land-bridges, most trees now living attained to a cosmopolitan distribution. A gradual lowering of temperatures, however, paved the way for Pleistocene cold, and many trees began to seek provinces best suited to their growth. Land masses and forest forms resembled those of today. Mammoths and sabre-tooth tigers featured a varied fauna.

The Pleistocene epoch was the Age of Glaciation. America was geographically fortunate, in that her mountain-chains had been builded with a north-to-south extension; fortunate, again, in that the maximum extent of the glaciers at no time reached south of Staten Island. Back up the valleys, during each interglacial period, in the wake of the retreating ice, followed the trees, the grasses, the animals. Our tree-losses were insignificant: we have 250 species today, and less than twenty were blotted out by the Glacial Period. Those lost were related to present species.

Europe fared not nearly so well. The plants, in the slow interval that marked periodic approaches of the glacier, sought to retreat to a more favored climate. But they were crowded inexorably into the Mediterranean, Black, or Caspian seas, or their seeds slowly froze to death on the northern slopes of the Alps, Pyrenees, or Carpathians, mountains with an east-to-west extension. Switzerland had 300 trees in its Miocene flora, including more species of maple than have existed in any country before or since, but very few survived the Pleistocene.

Of 170 species of holly, only one was left by the glaciers in Europe. From this single species comes our most significant association with the holly—the cheerful Yuletide tree. Teutonic place-names with the suffix "holen" or "holm" originally meant places where holly abounded. Many hollys are native to North America, but most are found in northern South America. Paraguayan holly, containing ilicin, a principle with tonic properties, furnishes *mate*, a popular Paraguayan beverage.

Europe's two species of black locust were destroyed by the Ice Sheet, but this much-traveled tree had to wait less than two million years before its branches again cast their shadows on European soil. It was introduced from America in the sixteenth century, and is today perhaps the most extensively planted American tree on the European continent. It grows strong and healthy on the plains of Hungary, and American planters within the past year have sent to Hungary for seeds to retransplant in America. Our native trees are subject to locust canker.

Asia was largely ice-free. So it was into the forests and game preserves of southern North America and southeastern Asia that trees fugitive from the glaciers took refuge. That is why the tulip tree, a vanishing race, with one species in eastern America and the other in central China, has made its final stand on opposite sides of the Northern Hemisphere. The Pleistocene pursued the gingko from America and Europe to Asia, where it might have perished save for the priesthood of the Orient; segregated the once cosmopolitan Sequoia to dignified exile on the Pacific coast; killed the ancient bald cypress in Europe, and caused it to take refuge along the friendly shores of the Gulf of Mexico; made three attempts to cut off the European sassafras, to succeed in the fourth glaciation, and to segregate surviving members of the species in America and China; annihilated European magnolias, spreading the survivors to America, Asia, and Australia; concentrated two-thirds of all existing maple species in eastern Asia, leaving Europe but a few along the Mediterranean; but struck back at Asia when it robbed her of all but one species of hickory, and forced the rest to find sanctuary in eastern America and along the Gulf coast. Case-histories of trees might be endlessly multiplied to account for the total disappearance or present distribution of many trees once flourishing in lands to which they are now unknown.

Unglaciated Asia was free to develop a diverse tree population. The stimulus of Pleistocene cold probably hastened the development of man in Mongolia during this period, for early human remains are found both in Asia and Europe before the fourth and final onslaught of the ice. Europeans, within historic times, might have drawn upon Asiatic tree resources to build up their decimated forests, but, in their attempts to reach the rich civilization of the Orient, America stood conveniently in the westward path of exploration and was discovered first. That is why Europe's forests have been reinforced

mainly by American "exotics," most of which, in the light of geologic history, are being repatriated after long absence to sink their roots in soil familiar to their ancestors.

Of American flora in postglacial time—a period of sufficient duration to carve Niagara's gorge—little is known. Economic use of peat in Europe has led to interesting revelations there anent post-Pleistocene tree-growths and early man in relation to forests. Pollen-grains found in peat have made it possible to reconstruct the forest scene, and the position of Paleolithic implements discovered in the peat indicate the forest growths in which primitive man lived and hunted during various stages of his development.

In America, where vast coal deposits have furnished superior fuel, little attention has been paid to native peat. When economic necessity creates a demand for American peat the postglacial forest panorama will be reconstructed, and—who knows?—early American human life may be read in a new light from Nature's pages now buried under the slime of an obscure swamp.

Two clearly-marked periods of postglacial pine-hickory ascendancy have been found in the Dismal Swamp of Virginia, with a strong grass maximum between. Similar results are shown in studies of scattered middle-western bogs. Scientists are now probing the secrets of peat in several states, and interesting revelations may be made within the next few years.

ILLICIT TRAFFICKING IN BEAVER

(*Continued from page* 175)

several hours they managed to recover one pack which had become wedged between two large rocks. The boat and the pack containing their entire food supply, however, was gone.

One of their rifles was also lost; but the other fortunately had been disjointed and placed in the pack recovered. When it seemed futile to attempt further recovery of lost equipment, the wardens moved to higher ground and unpacked the salvaged, water-soaked pack containing their tent and sleeping bags. There was an exchange of commendable smiles when both men almost simultaneously produced from their pockets waterproof matchsafes; and they could not suppress genuine laughter in spite of their grief, when one brought forth a rubber screw-top safe filled with salt. As they proceeded to dry and qualify each article for further service, they failed to notice the lateness of the day. Dusk had set in; it was useless to attempt hunting. So both men grimly crawled into their sleeping bags hungry.

On that borderline between sleep and wakefulness there was a sudden commotion in the tent. The former outlaw had just been in the process of falling asleep when he heard a sound like that of striking a small board flatwise on the surface of water. He hurriedly slipped from the tent, with a parting remark that he would return soon. Shortly afterward the crack of a rifle filled the night with myriad reverberations. In five minutes he stood in the light of a night fire rather sheepishly holding a large dripping beaver. Little time was lost before both men sat before a replenished fire eating juicy beaver steaks and ironically admonishing each other for the example they were setting as wardens.

Toward nightfall the next day the wardens stood at the edge of a lake and strained their nerves for what they thought was the smell of smoke. When the wind came in a certain direction, an unmistakable odor of burning wood was evident; but it was so faint that it almost required the additional play of the imagination to be perceptible. They decided to spend the night at this point and carefully note the direction of the wind when the odor was sensed. Toward night the scent was lost entirely; but as dawn approached, it was again in evidence, especially when the wind came directly across the lake. For some time they studied the opposite shore; and being certain that nothing stirred there, a raft was constructed and a successful crossing made.

On reaching the shore, they were startled by the muffled shot of a distant rifle. Hurrying their steps in that general direction, a gradually increasing odor of wood smoke was in evidence. Now, to facilitate the certainty of approach, they moved with great caution even though the shot and smoke were sufficiently attenuated in quality to prove the outlaws some distance away.

A map showed near this point a series of streams emptying from the west into a moderate sized lake. The wardens felt certain that the outlaws were working on these streams, and that their camp was on the lake proper. They were not long in finding this body of water but the overflow from the streams made travel with the meager equipment almost prohibitive. Finally it was decided to wait until evening to see if a fire would be visible. In the meantime, they lunched on cold meat and drank water almost opaque with the deep tea color of vegetation.

Their concluding hypothesis was correct. Not far from where a rapid stream emptied into the lake, a fire was being kindled in the dwindling light of day that gained greater brightness as the sun receded. Soon it cast a sanguine aurora over the timber on the west shore and was caught in scintillating magnificence by the prisms of piled ice along the waterfront. The wardens waited long into the night but not by any leaning to procrastination, for they had made their plans. A raft constructed from two partly decayed cedar trunks lashed together was moved to the water's edge. When the distant fire had burned to glowing coals, they slipped their improvised bark into the water and quietly pushed it along with short poles, every care being taken to avoid unusual sounds.

Progress was extremely slow, but their bodies were warmed with the thrill of the venture. Fortunately, the sky was overcast and they could not be seen on the lake. The crunching ice along the shore, heaved by the water, absorbed less obvious sounds and proved of great value in making an approach. Now and then in the camp ahead, a glowing coal was whipped into an illuminating flame, lighting up the surrounding thicket, and then dying quickly. When the shore appeared closer, they saw the drab walls of a tent in the fire's glow. The plan of the wardens was to rush the camp if there were beaver pelts in evidence; but this plan was curtailed when it was discovered that the piling ice from the recent break-up prevented their landing near the camp. A landing was made, however, a short distance down the lake; and along the piled ice, they made their way afoot to a trail that led from the tent to the water's edge. Over this trail they moved with no more than crawling progress.

On reaching the rise of the shore they

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discovered a revealing sight. In the glow of the receding fire a half dozen empty beaver stretchers lodged against a tree, while a short distance beyond, a number of others were filled with hides like so many drum heads drying in the air.

Some intuitive sense of the sleeper must have warned the outlaws of a presence, for certainly the slight noise made by the wardens could not have been heard by the outlaws above the crunching ice on the shore. But whatever it was, they were now stirring in their tent. A rapid decision was imminent, for past history had shown that these two offenders would not be taken without a fight.

The legal approach in making an arrest was of some concern to the regular warden and he announced the presence of officers. Throwing the flaps aside, he demanded that the outlaws come out of the tent with their hands up. But the outlaws had no such intention. They tore up the lower part of the tent at the rear and started crawling out, both armed with rifles. This move was anticipated by the new warden through his own colorful days; and before the outlaw making his exit could fully straighten up, he was met with a fist that sent him staggering into the brush. There was a rush through the flaps of the tent as the regular warden met his adversary who had failed to make an exit at the rear.

In a moment there was pandemonium. The tent was torn from its moorings by the battle that ensued within. No more disturbance could have been done by two moose in battle at rutting season. One of the outlaws was writhing upon the ground in semi-consciousness while the two wardens were busy trying to disengage a knife from the steel grip of the second outlaw. In time the two were shackled together; but it was four weak and bruised men who the next day started for the settlement, where neutral men would decide the rights of the commonwealth and the fate of the two outlaws.

It was impossible to erase the leopard spots. Allegedly, there was many a questionable transaction in the new administration, caused by the hiring of outlaws. Reports came that the one-time outlaws were trapping and shooting beaver instead of enforcing the law and apprehending violators in their newly acquired capacity as wardens. Shift after shift followed as the administrations were changed, but the conditions for a time were little improved.

The present commission has succeeded in apprehending a number of violators in the beaver traffic, obtaining over forty convictions in the spring of 1934. But the major violators have not been apprehended. Large criminal syndicates have been formed to remove the beaver from the North Country, the chief device of their trade being the airplane. When the season comes on, outlaws are flown across the wilderness where they are deposited with their equipment on the snowy surface of some lake. With traps and rifles, equipped with silencers, these outlaws proceed to rip open the lodges of the beaver and dismantle the dams. And when they have plundered the area, a plane with sled runners comes humming over the forest and drops smoothly upon the snowy surface to pick up the hides and move the trappers to new and fertile territory.

Game commissioners in Minnesota have been pleading for necessary planes to attack the illicit traffic, but a deaf ear has been turned to them. Unless something is done soon, the syndicate will have removed from the North Country one of the most interesting and phenomenal creatures of the wild.

WHO'S WHO

Among the Authors in This Issue

FREDERICK C. LINCOLN (*Ancestral Highways of the Sky*) is in charge of Distribution and Migration of Birds, United States Biological Survey. He joined the Survey in 1920 and has made bird-banding his major work in the study of bird migration. He is frequently called the Director of Bird-Banding in America. Mr. Lincoln has conducted ornithological expeditions in several states, and in 1931 was a member of the Smithsonian Scientific Expedition to Haiti and the Dominican Republic. He is a native of Colorado.

Thomas H. MacDonald

THOMAS H. MACDONALD (*Let's Look to the Roadside*) is Chief of the Bureau of Public Roads, United States Department of Agriculture. Born in Colorado, he attended Iowa State College and since his graduation in 1904, his professional life has been devoted exclusively to the cause of better highways. In his work as Chief of the Bureau of Public Roads, Mr. MacDonald guides the cooperative road building operations of the Federal Government and the states.

F. A. SILCOX (*Forestry—A Public and Private Responsibility*) is Chief of the United States Forest Service. Prior to his appointment as Chief Forester, he was Director of Industrial Relations for the New York Employing Printers' Association.

ROBERT FECHNER (*What the C.C.C. Means to Me*) has been Director of Emergency Conservation Work since its inception in 1933. Previous to that time he was executive officer of the International Association of Machinists. He was born in Chattanooga, Tennessee.

EARLE DRAPER (*Forestry and Regional Planning*) is Director, Division of Land Planning and Housing for the Tennessee Valley Authority, Knoxville, Tennessee. Born in Massachusetts and graduated from the State College in 1915, Mr. Draper later settled in Charlotte, North Carolina, and became a pioneer in land scape architecture in the southern states.

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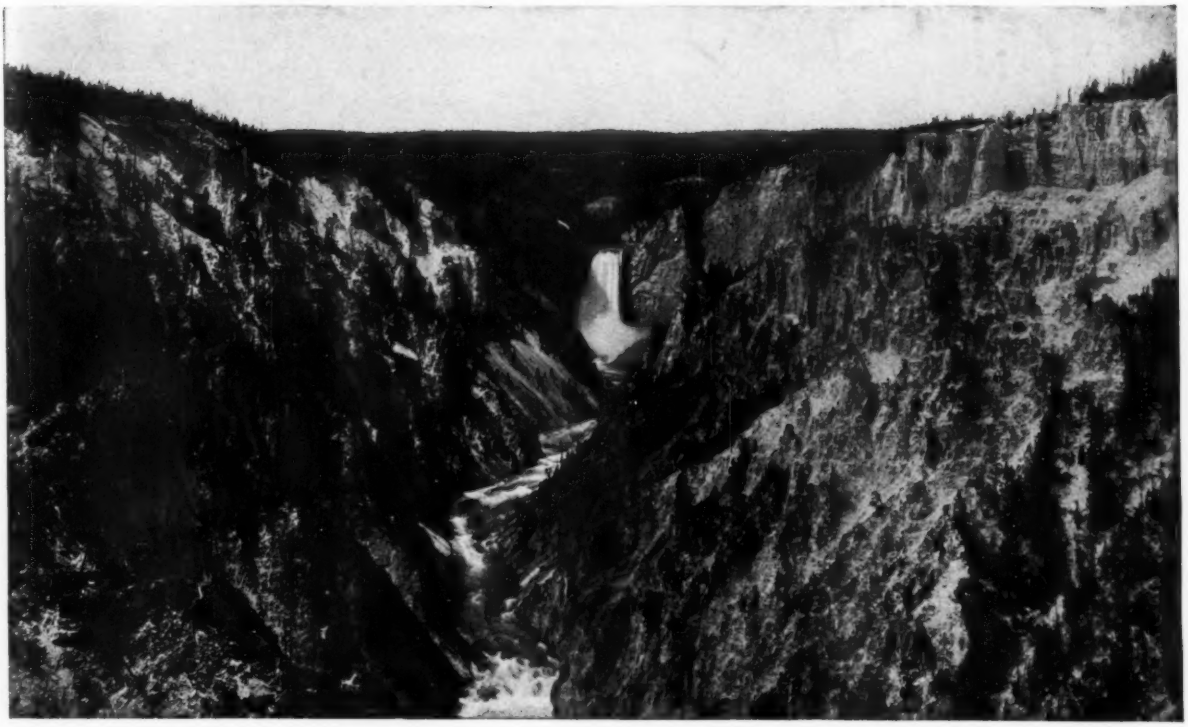

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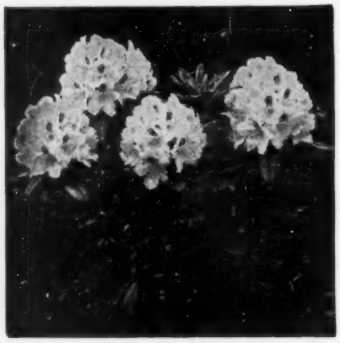

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